

BlackBerry Enterprise Server for Microsoft Exchange

Version: 5.0
Service Pack: 4



Installation and Configuration Guide

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Overview: BlackBerry Enterprise Server

1

The BlackBerry Enterprise Server is designed to be a secure, centralized link between an organization's wireless network, communications software, applications, and BlackBerry smartphones. The BlackBerry Enterprise Server integrates with your organization's existing infrastructure to provide smartphone users with mobile access to your organization's resources.

You can manage the BlackBerry Enterprise Server, smartphones, and user accounts using the BlackBerry Administration Service. You can access the BlackBerry Administration Service web application from any computer that can access the computer that hosts the BlackBerry Administration Service.

You can optionally install BlackBerry Management Studio in your organization's environment to provide a simplified administrative console for your organization's helpdesk administrators and an integrated view of the BlackBerry Enterprise Server and other MDM domains. For more information, visit <http://www.blackberry.com/go/serverdocs> to see the *BlackBerry Management Studio Feature and Technical Overview*.

Planning a BlackBerry Enterprise Server installation

2

You can install all BlackBerry Enterprise Server components on one computer, or you can install specific components on separate computers. You should consider any impact to system resources before you decide where to install the components.

You install all components on one computer if you do not plan to activate many BlackBerry devices, if you determine that the computer can manage the volume of traffic for the BlackBerry Enterprise Server components, and if it is acceptable that the computer has direct access to the Internet, without being located in the DMZ.

If you want to configure high availability, you must install an additional BlackBerry Enterprise Server on a computer that is separate from the computer that hosts the primary BlackBerry Enterprise Server. During the installation process, you specify that the duplicate BlackBerry Enterprise Server is the standby BlackBerry Enterprise Server.

For performance information, see the *BlackBerry Enterprise Server Performance Benchmarking Guide*.

For more information about high availability, see the *BlackBerry Enterprise Server Planning Guide*.

Installing all BlackBerry Enterprise Server components on one computer

If you want to evaluate the BlackBerry Enterprise Server or complete a BlackBerry Enterprise Server installation for a small number of users, you can install all the BlackBerry Enterprise Server components on the same computer.

During the installation process you can choose to install the BlackBerry Collaboration Service and BlackBerry Web Desktop Manager with the BlackBerry Enterprise Server. All of the other BlackBerry Enterprise Server components are installed automatically when you install the BlackBerry Enterprise Server.

Installing the BlackBerry Administration Service

The BlackBerry Administration Service permits you to manage a BlackBerry Enterprise Server domain through a web-based application. A BlackBerry Enterprise Server domain consists of one BlackBerry Configuration Database and all BlackBerry Enterprise Server instances and remote components that use the BlackBerry Configuration Database.

You can install the BlackBerry Administration Service with other BlackBerry Enterprise Server components or by itself on a separate computer. You can install the BlackBerry Administration Service on a separate computer to limit the impact that the BlackBerry Administration Service might have on system resources and to prevent administrators in your organization from accessing any part of the computer that hosts the BlackBerry Enterprise Server. If you install the BlackBerry Administration Service before you install a BlackBerry Enterprise Server, the installation process will complete successfully but it will not function properly until the BlackBerry Enterprise Server is installed.

When you install the BlackBerry Administration Service, you can install the BlackBerry Web Desktop Manager and select whether you want administrators to use Windows authentication or BlackBerry Administration Service authentication to log in to the BlackBerry Administration Service. You must verify that all administrators have access to the BlackBerry Administration Service web address (https://<computer_name>:<port>/webconsole/app).

Installing the BlackBerry Attachment Service

The BlackBerry Attachment Service converts supported attachments into a format that users can view on their BlackBerry devices. By default, the BlackBerry Enterprise Server includes the BlackBerry Attachment Service.

The BlackBerry Attachment Service might use increased system resources when it processes numerous conversion requests simultaneously. If you want to increase the number of conversion requests that can occur concurrently without impacting message delivery, you can install a BlackBerry Attachment Service on a computer that is separate from the computer that hosts the BlackBerry Enterprise Server.

You can connect multiple BlackBerry Enterprise Server instances and BlackBerry MDS Connection Service instances to a BlackBerry Attachment Service instance.

When you install the BlackBerry Attachment Service on a computer that is separate from the computer that hosts the BlackBerry Enterprise Server, the installation process installs the BlackBerry Attachment Service and BlackBerry Controller. The BlackBerry Controller monitors the BlackBerry Attachment Service and restarts it if it stops responding.

Installing the BlackBerry Collaboration Service

The BlackBerry Collaboration Service provides an encrypted connection between your organization's instant messaging server and the collaboration client on BlackBerry devices so that BlackBerry device users can start and manage instant messaging conversations on their devices.

If you want to maximize the number of sockets available so that the BlackBerry Collaboration Service can respond to an increased amount of requests from the collaboration client, you can install the BlackBerry Collaboration Service by itself on a computer that is separate from the computer that hosts the BlackBerry Enterprise Server. (Microsoft Office Communications Server 2007 R2 and Microsoft Lync Server 2010 do not use persistent socket connections.)

If you install the BlackBerry Collaboration Service on a separate computer, the installation process installs the BlackBerry Collaboration Service and BlackBerry Controller. The BlackBerry Controller monitors the BlackBerry Collaboration Service and restarts it if it stops responding.

You can connect multiple BlackBerry Enterprise Server instances to a BlackBerry Collaboration Service instance.

A different type of BlackBerry Collaboration Service exists for each instant messaging environment. For example, a BlackBerry Collaboration Service exists for Microsoft Office Communications Server 2007, and a different BlackBerry Collaboration Service exists for IBM Sametime. You can install only one type of BlackBerry Collaboration Service for each BlackBerry Enterprise Server in your organization's environment. Users can use only one type of collaboration client on their devices.

Installing the BlackBerry MDS Connection Service

The BlackBerry MDS Connection Service provides users with access to online content and applications on your organization's intranet or the Internet. By default, the BlackBerry Enterprise Server includes the BlackBerry MDS Connection Service.

The BlackBerry MDS Connection Service might use increased system resources when it processes content requests. If you want to minimize the impact this has on message delivery, you can install the BlackBerry MDS Connection Service by itself on a computer that is separate from the computer that hosts the BlackBerry Enterprise Server.

You can connect multiple BlackBerry Enterprise Server instances to a BlackBerry MDS Connection Service instance.

When you install the BlackBerry MDS Connection Service on a separate computer, you must assign at least one BlackBerry Enterprise Server instance to it during the installation process. The BlackBerry MDS Connection Service uses the BlackBerry Enterprise Server information to connect to the BlackBerry Attachment Service.

When you install the BlackBerry MDS Connection Service on a separate computer, the installation process installs the BlackBerry MDS Connection Service and BlackBerry Controller. The BlackBerry Controller monitors the BlackBerry MDS Connection Service and restarts it if it stops responding.

Installing the BlackBerry Router

The BlackBerry Router connects to the wireless network and sends data to and from BlackBerry devices.

You can install a BlackBerry Router with other BlackBerry Enterprise Server components or by itself on a separate computer. You can install the BlackBerry Router on a computer that is separate from the computer that hosts the BlackBerry Enterprise Server if you want to install the BlackBerry Router in the DMZ, or to install standby BlackBerry Router instances as failover components in case the primary BlackBerry Router is unavailable.

You can connect multiple BlackBerry Enterprise Server instances to a BlackBerry Router instance.

If you install the BlackBerry Router on a separate computer, the installation process installs the BlackBerry Router and BlackBerry Controller. The BlackBerry Controller monitors the BlackBerry Router and restarts it if it stops responding.

Hardware requirements: BlackBerry Enterprise Server

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The following are requirements for a BlackBerry Enterprise Server and the BlackBerry Enterprise Server components that you install on a single computer, and excludes the BlackBerry Collaboration Service. The requirements are for a BlackBerry Enterprise Server environment that includes users that receive 100 to 200 email messages each day.

You can improve the performance and reliability of the BlackBerry Enterprise Server by installing the BlackBerry Enterprise Server components on multiple computers. If your BlackBerry Enterprise Server environment supports up to 1000 users, install the BlackBerry Configuration Database on a computer that is separate from the computer that hosts the BlackBerry Enterprise Server. If your BlackBerry Enterprise Server environment supports up to 2000 users, install the BlackBerry Configuration Database and the BlackBerry Administration Service on computers that are separate from the computer that hosts the BlackBerry Enterprise Server.

Item	Requirement
BlackBerry Enterprise Server that supports up to 200 users	<ul style="list-style-type: none"> • Single processor, 2.0 GHz Intel Xeon (two processors recommended) • 2 GB of memory • 64-bit operating system: Two 64 GB drives (minimum), RAID 1 • 32-bit operating system: Two 36 GB drives (minimum), RAID 1 • 150 MB disk space for the BlackBerry Enterprise Server • 400 MB disk space for the BlackBerry Administration Service • Approximately 2 MB per user each day for log files (100 email messages per user)
BlackBerry Enterprise Server that supports up to 500 users	<ul style="list-style-type: none"> • Two processors, 2.0 GHz Intel Xeon • 2 GB of memory • 64-bit operating system: Two 64 GB drives (minimum), RAID 1 • 32-bit operating system: Two 36 GB drives (minimum), RAID 1 • 150 MB disk space for the BlackBerry Enterprise Server • 400 MB disk space for the BlackBerry Administration Service • Approximately 2 MB per user each day for log files (100 email messages per user)

Item	Requirement
BlackBerry Enterprise Server that supports up to 1000 users	<ul style="list-style-type: none">• Two processors, 2.0 GHz Intel Xeon• 3 GB of memory• 64-bit operating system: Two 64 GB drives (minimum), RAID 1• 32-bit operating system: Two 36 GB drives (minimum), RAID 1• 150 MB disk space for the BlackBerry Enterprise Server• 400 MB disk space for the BlackBerry Administration Service• Approximately 2 MB per user each day for log files (100 email messages per user)
BlackBerry Enterprise Server that supports up to 2000 users	<ul style="list-style-type: none">• Two processors, 2.8 GHz Intel Xeon or two processors, 1.86 GHz Intel Xeon 5100 Series (Dual Core)• 4 GB of memory• 64-bit operating system: Two 64 GB drives (minimum), RAID 1 or four 64 GB drives (minimum), RAID 1+0• 32-bit operating system: Two 36 GB drives (minimum), RAID 1 or four 36 GB drives (minimum), RAID 1+0• 150 MB disk space for the BlackBerry Enterprise Server• 400 MB disk space for the BlackBerry Administration Service• Approximately 2 MB per user each day for log files (100 email messages per user)

System requirements

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For information about calculating hardware requirements, visit www.blackberry.com/go/serverdocs to see the *BlackBerry Enterprise Server Capacity Calculator* and *BlackBerry Enterprise Server Performance Benchmarking Guide*.

System requirements: BlackBerry Enterprise Server

Item	Requirement
operating system	<p>Any of the following operating systems:</p> <ul style="list-style-type: none"> • Windows Server 2003 SP2 (32-bit or 64-bit) • Windows Server 2003 R2 SP2 (32-bit or 64-bit) • Windows Server 2008 SP2 (32-bit or 64-bit) • Windows Server 2008 R2 • Windows Server 2008 R2 SP1 • Windows Server 2012
Microsoft Exchange system tools	<p>Any of the following system tools:</p> <ul style="list-style-type: none"> • Microsoft Exchange 2003 SP2 System Manager • Microsoft Exchange Server MAPI Client and CDO 1.2.1 <p>To support Microsoft Exchange Server 2010, you must install version 6.5.8211.0 or later of the Microsoft Exchange Server MAPI Client and CDO 1.2.1.</p> <p>For more information about installing MAPI and CDO patches on your organization's BlackBerry Enterprise Server, visit support.microsoft.com to read article 917481 and visit www.blackberry.com/go/kbhelp to read article KB15779.</p>
Microsoft Exchange organization of the system tools for the messaging server	The same Microsoft Exchange organization that the messaging server uses

Item	Requirement
CDO library	To support the latest version of Microsoft Exchange Server in your organization's environment, the latest version of the CDO library that applies to the Microsoft Exchange Server version
Unicode support for calendars	To support Microsoft Exchange Server 2003, the following Microsoft hotfixes: <ul style="list-style-type: none"> • 913643 on the messaging server • 923537 on the computer that hosts the BlackBerry Enterprise Server
static IP address for the computer	To install the BlackBerry Administration Service in a pool, a static IP address for the computer that hosts the component
browser	Windows Internet Explorer 7.0 to 8.0 with language preferences configured to display encoded web pages
media player	One of the following: <ul style="list-style-type: none"> • if using Windows Server 2008, to support audio attachments, Windows Media Format SDK (for more information, visit msdn.microsoft.com and search Windows Media Format SDK) • if using Windows Server 2003, to support audio attachments, Windows Media Player 9 or later
network proximity	A high-speed, switched connection between the BlackBerry Enterprise Server and messaging servers
File and Printer Sharing	If using Windows Server 2003, to permit the BlackBerry Controller to monitor BlackBerry Enterprise Server components, install File and Printer Sharing For more information, see the documentation for Windows Server

System requirements: BlackBerry Administration Service and BlackBerry Web Desktop Manager

The following system requirements apply to the computer that you install the BlackBerry Administration Service and BlackBerry Web Desktop Manager on.

Item	Requirement
operating system	Any of the following operating systems: <ul style="list-style-type: none"> • Windows Server 2003 SP2 (32-bit or 64-bit) • Windows Server 2003 R2 SP2 (32-bit or 64-bit) • Windows Server 2008 SP2 (32-bit or 64-bit) • Windows Server 2008 R2 • Windows Server 2008 R2 SP1 • Windows Server 2012 • Microsoft hotfix 955839 installed on the computer that hosts the BlackBerry Administration Service and BlackBerry Web Desktop Manager
memory	A minimum 1.2 GB of memory
hardware load balancer	If you configure high availability for the BlackBerry Administration Service using a hardware load balancer, you must implement session persistence for SSL connections. For information on how to implement session persistence, contact the vendor of your hardware load balancer.
outgoing data connection	For the BlackBerry Administration Service, an HTTPS connection using port number 443

System requirements: BlackBerry Enterprise Server databases

Item	Requirement
database management system	Any of the following database management systems: <ul style="list-style-type: none"> • Microsoft SQL Server 2005 SP3 (32-bit or 64-bit) • Microsoft SQL Server 2005 SP4 (32-bit or 64-bit) • Microsoft SQL Server 2005 Express SP3 • Microsoft SQL Server 2008 SP2 (32-bit or 64-bit) • Microsoft SQL Server 2008 SP3 (32-bit or 64-bit)

Item	Requirement
	<ul style="list-style-type: none">• Microsoft SQL Server 2008 R2 (32-bit or 64-bit)• Microsoft SQL Server 2008 R2 SP1 (32-bit or 64-bit)• Microsoft SQL Server 2008 R2 SP2 (32-bit or 64-bit)• Microsoft SQL Server 2008 Express SP3 (32-bit or 64-bit)• Microsoft SQL Server 2008 R2 Express SP1 (32-bit or 64-bit)• Microsoft SQL Server 2008 R2 Express SP2 (32-bit or 64-bit)• Microsoft SQL Server 2012 (32-bit or 64-bit)
collation setting	<p>To configure collation settings, the following conditions:</p> <ul style="list-style-type: none">• database server collation configured to default case-insensitive• BlackBerry Configuration Database collation configured to default case-insensitive• collation must be the same for the Microsoft SQL Server instance and the database server that hosts the BlackBerry database notification system (BlackBerry Configuration Database)• default collations are suggested though non-default collations are supported (for more information, visit www.blackberry.com/go/kbhelp to read articles KB04785 and KB15534)
database connectivity	<ul style="list-style-type: none">• TCP/IP network protocols turned on• No count option turned off
nested triggers	<p>Nested trigger support turned on. For more information, visit msdn.microsoft.com to read article ms178101.</p>
database mirroring	<p>To support database mirroring for the BlackBerry Configuration Database, the following conditions:</p> <ul style="list-style-type: none">• Any of the following database management systems:<ul style="list-style-type: none">• Microsoft SQL Server 2005 SP3 Enterprise Edition or Standard Edition (32-bit or 64-bit)• Microsoft SQL Server 2005 SP4 Enterprise Edition or Standard Edition (32-bit or 64-bit)

Item	Requirement
	<ul style="list-style-type: none"> • Microsoft SQL Server 2008 SP1 Enterprise Edition or Standard Edition (32-bit or 64-bit) • Microsoft SQL Server 2008 SP2 Enterprise Edition or Standard Edition (32-bit or 64-bit) • Microsoft SQL Server 2008 R2 Enterprise Edition or Standard Edition (32-bit or 64-bit) <ul style="list-style-type: none"> • the mirror database must reside on a different computer from the principal database • the Microsoft SQL Server instances for both the principal and mirrored databases must be the same version and edition • only use static port number 1433 • do not use named instances • verify that the SQL Server Browser service is running • turn off the Named Pipes option in the Microsoft SQL Server Native Client on the computers that host the BlackBerry Enterprise Server instances
database transactional replication	<p>To support database transactional replication for the BlackBerry Configuration Database, the following conditions:</p> <ul style="list-style-type: none"> • the database server must be Microsoft SQL Server 2005 SP3 or later • the database server that hosts the replicated database must use the same version and build as the database server that hosts the primary database

System requirements: BlackBerry Attachment Service

The following system requirements apply to the computer that you install the BlackBerry Attachment Service on.

Item	Requirement
operating system	Any of the following operating systems:

Item	Requirement
	<ul style="list-style-type: none"> • Windows Server 2003 SP2 (32-bit or 64-bit) • Windows Server 2003 R2 SP2 (32-bit or 64-bit) • Windows Server 2008 SP2 (32-bit or 64-bit) • Windows Server 2008 R2 • Windows Server 2008 R2 SP1 • Windows Server 2012
media player	<p>One of the following:</p> <ul style="list-style-type: none"> • if using Windows Server 2008, to support audio attachments, Windows Media Format SDK (for more information, visit msdn.microsoft.com and search Windows Media Format SDK) • if using Windows Server 2003, to support audio attachments, Windows Media Player 9 or later
browser	Windows Internet Explorer 7.0 to 8.0 with language preferences configured to display encoded web pages

System requirements: BlackBerry Collaboration Service

The following system requirements apply to the computer that you install the BlackBerry Collaboration Service on.

Item	Requirement
operating system	<p>Unless otherwise stated, any of the following operating systems:</p> <ul style="list-style-type: none"> • Windows Server 2003 SP2 (32-bit or 64-bit) • Windows Server 2003 R2 SP2 (32-bit or 64-bit) • Windows Server 2008 SP2 (32-bit or 64-bit) • Windows Server 2008 R2 • Windows Server 2008 R2 SP1

Item	Requirement
	<ul style="list-style-type: none"> Windows Server 2012
IBM Sametime	IP address of the computer that hosts the BlackBerry Collaboration Service added to the CommunityConnectivity document on the IBM Sametime server
Novell GroupWise Messenger	SSL authentication turned on for the Novell GroupWise Messenger agents on the Novell GroupWise Messenger server
Microsoft Office Live Communications Server 2005 or Microsoft Office Communications Server 2007	The latest Microsoft hotfixes installed
Microsoft Office Communications Server 2007 R2	<ul style="list-style-type: none"> Any of the following operating systems: <ul style="list-style-type: none"> Windows Server 2003 R2 SP2 (64-bit) Windows Server 2008 SP2 (64-bit) Windows Server 2008 R2 Windows Server 2008 R2 SP1 Windows Server 2012 The latest Microsoft hotfixes installed The BlackBerry Collaboration Service installed in the same Microsoft Active Directory domain as Microsoft Office Communications Server 2007 R2 The Windows account that runs the BlackBerry Collaboration Service added to one of the following groups: <ul style="list-style-type: none"> RTCUniversalServerAdmins group, to automatically provision the BlackBerry Collaboration Service as a trusted service in Microsoft Active Directory (for more information, visit msdn.microsoft.com to read about required Microsoft Active Directory permissions) RTCComponentUniversalServices group, if you use another account with the required permissions (RTCUniversalServerAdmins) to manually provision the BlackBerry Collaboration Service as a trusted service in Microsoft Active Directory (for more information, see "Manually provision the BlackBerry Collaboration Service as a trusted application") Microsoft .NET Framework 3.5 SP1 Microsoft Visual C++ 2008 Redistributable Package (vc redistrib_x64.exe) Microsoft SQL Server Native Client (sqlncli_x64.msi)

Item	Requirement
	<ul style="list-style-type: none"> • Microsoft Unified Communications Managed API 2.0 Core Redist 64-bit (ucmaredist.msi) • Microsoft Office Communications Server 2007 R2, Core Components (ocscore.msi) • The required certificate installed in the Personal Certificate folder for the local computer account <p>For detailed instructions about the Microsoft install packages and installing the required certificate, see "Preparing the computer that hosts the BlackBerry Collaboration Service for use with Microsoft Office Communications Server 2007 R2".</p>
Microsoft Lync Server 2010	<ul style="list-style-type: none"> • Any of the following operating systems: <ul style="list-style-type: none"> • Windows Server 2003 R2 SP2 (64-bit) • Windows Server 2008 SP2 (64-bit) • Windows Server 2008 R2 • Windows Server 2008 R2 SP1 • Windows Server 2012 • The latest Microsoft hotfixes installed • The BlackBerry Collaboration Service installed in the same Microsoft Active Directory domain as Microsoft Lync Server 2010 • The Windows account that runs the BlackBerry Collaboration Service added to one of the following groups: <ul style="list-style-type: none"> • RTCUniversalServerAdmins group, to automatically provision the BlackBerry Collaboration Service as a trusted service in Microsoft Active Directory (for more information, visit msdn.microsoft.com to read about required Microsoft Active Directory permissions) • RTCComponentUniversalServices group, if you use another account with the required permissions (RTCUniversalServerAdmins) to manually provision the BlackBerry Collaboration Service as a trusted service in Microsoft Active Directory (for more information, see "Manually provision the BlackBerry Collaboration Service as a trusted application") • Microsoft .NET Framework 3.5 SP1 • Microsoft Visual C++ 2008 Redistributable Package (vcredist_x64.exe)

Item	Requirement
	<ul style="list-style-type: none"> • Microsoft SQL Server Native Client (sqlncli_x64.msi) • Microsoft Unified Communications Managed API 2.0 Core Redist 64-bit (to download ucmaledist.msi, visit the Volume Licensing Service Center at www.microsoft.com) • Microsoft Office Communications Server 2007 R2, Core Components (to download ocscore.msi, visit the Volume Licensing Service Center at www.microsoft.com) • The required certificate installed in the Personal Certificate folder for the local computer account <p>For detailed instructions about the Microsoft install packages and installing the required certificate, see "Preparing the computer that hosts the BlackBerry Collaboration Service for use with Microsoft Lync Server 2010".</p>

System requirements: BlackBerry MDS Connection Service

The following system requirements apply to the computer that you install the BlackBerry MDS Connection Service on.

Item	Requirement
operating system	<p>Any of the following operating systems:</p> <ul style="list-style-type: none"> • Windows Server 2003 SP2 (32-bit or 64-bit) • Windows Server 2003 R2 SP2 (32-bit or 64-bit) • Windows Server 2008 SP2 (32-bit or 64-bit) • Windows Server 2008 R2 • Windows Server 2008 R2 SP1 • Windows Server 2012
RSA Authentication Agent	<p>To support enhanced network authentication (optional), RSA Authentication Agent 6.1 for Windows Server 2003 or RSA Authentication Agent 7.0.1 for Windows Server 2008.</p>
memory	<p>One of the following:</p>

Item	Requirement
	<ul style="list-style-type: none"> • if you install a central push server and less than 1000 user accounts, a minimum of 1024 MB • if you install a central push server and more than 1000 user accounts, a minimum of 3 GB • if you do not install a central push server, a minimum of 512 MB

System requirements: BlackBerry Router

To install the BlackBerry Router on a computer that is separate from the computer that hosts the BlackBerry Enterprise Server, any of the following operating systems:

- Windows Server 2003 SP2 (32-bit or 64-bit)
- Windows Server 2003 R2 SP2 (32-bit or 64-bit)
- Windows Server 2008 SP2 (32-bit or 64-bit)
- Windows Server 2008 R2
- Windows Server 2008 R2 SP1
- Windows Server 2012

System requirements for your organization's environment

The following system requirements apply when you configure single sign-on authentication for the BlackBerry Administration Service and BlackBerry Web Desktop Manager or configure the BlackBerry MDS Connection Service to support Integrated Windows authentication.

Item	Requirement
network services	Microsoft Active Directory running at Windows Server 2003 domain functional level or higher

Item	Requirement
application server	For the BlackBerry MDS Connection Service to support Integrated Windows authentication, Microsoft IIS 6.0 or 7.0 using Integrated Windows authentication
file server	For the BlackBerry MDS Connection Service to support Integrated Windows authentication, Windows Server 2003 file services or Windows Server 2008 file services

System requirements: Computers for BlackBerry Web Desktop Manager and BlackBerry Administration Service users

Item	Requirement
browser	<ul style="list-style-type: none"> Windows Internet Explorer 7.0 to 8.0 Mozilla Firefox 3.6+ Google Chrome 4.0+ Safari 4 for Mac <p>Windows Internet Explorer 7 or later provides optimal support for BlackBerry Web Desktop Manager features and BlackBerry Administration Service features. Depending on the browser that you use, the BlackBerry Web Desktop Manager and BlackBerry Administration Service might not recognize BlackBerry devices and the browser might prevent you from activating devices that are connected to the computer, backing up and restoring device data, or adding or updating device applications.</p>
browser settings for Windows Internet Explorer	<p>To support browser access, you must configure the following settings:</p> <ul style="list-style-type: none"> language preferences configured to display encoded web pages Microsoft hotfix 955839 installed on the users' computers to make sure the correct time zones are displayed the following settings turned on to support Microsoft ActiveX:

Item	Requirement
	<ul style="list-style-type: none"> • Automatic prompting for Microsoft ActiveX controls • Download signed Microsoft ActiveX controls • Run Microsoft ActiveX controls and plug-ins • Script Microsoft ActiveX controls marked safe for scripting <ul style="list-style-type: none"> • support for JavaScript • cookies turned on • support for TLS or SSL • the SSL certificate installed to permit trusted connections to the BlackBerry Administration Service • if using Windows Vista, the BlackBerry Administration Service web address added as a trusted web site and Enable protected mode cleared • if you configure single sign-on authentication for the BlackBerry Administration Service <ul style="list-style-type: none"> • the BlackBerry Web Desktop Manager and BlackBerry Administration Service web sites assigned to the local intranet zone • Enable Integrated Windows Authentication selected • if you do not configure single sign-on authentication for the BlackBerry Administration Service <ul style="list-style-type: none"> • the BlackBerry Web Desktop Manager and BlackBerry Administration Service web sites assigned to the local intranet or trusted sites security zone
browser settings for Firefox, Safari, and Google Chrome	<p>To support browser access, you must configure the following settings:</p> <ul style="list-style-type: none"> • support for JavaScript • cookies turned on • support for TLS or SSL • to permit trusted connections to the BlackBerry Administration Service, the SSL certificate installed <p>Single sign-on authentication for the BlackBerry Administration Service is not supported by Google Chrome.</p>

System requirements: Messaging server

Any of the following messaging servers that are located in close proximity to where you want to install the primary BlackBerry Enterprise Server:

- Microsoft Exchange 2010 SP1 Multi-Tenant Deployment is supported with the following conditions:
 - Microsoft Exchange Server 2010 SP1 Update Rollup 3
 - To manage calendars, enable Microsoft Exchange Web Services
 - Configure the BlackBerry Enterprise Server to run without public folders
- Microsoft Exchange Server 2010 SP1
- Microsoft Exchange Server 2010 and Microsoft Exchange Server 2010 Update Rollup 1 (Microsoft Exchange Server MAPI Client and CDO 1.2.1 must be version 6.5.8211.0 or later to support Microsoft Exchange Server 2010)
- Microsoft Exchange Server 2007 SP2 or SP3
- Microsoft Exchange Server 2003 SP2
- Any of the following Microsoft Exchange mixed environments:
 - Microsoft Exchange Server 2003 and 2007
 - Microsoft Exchange Server 2007 SP2 and 2010
 - Microsoft Exchange Server 2007 SP2 and 2010 SP1
 - Microsoft Exchange Server 2007 SP3 and 2010
 - Microsoft Exchange Server 2007 SP3 and 2010 SP1

System requirements: Firewall

To install the BlackBerry Enterprise Server, configure a firewall or proxy firewall with the following conditions:

- Exclusive use of port 3101 to open and maintain an outbound, bidirectional TCP/IP connection to an external server
- Support for resolving Internet addresses that use DNS
- For proxy firewalls, transparency of the proxy server

System requirements: Instant messaging server

To install the BlackBerry Enterprise Server, any of the following instant messaging servers:

- IBM Sametime 7.0 Community Server
- IBM Sametime 7.5 Community Server
- IBM Sametime 8.0 Community Server
- IBM Sametime 8.0.1 Community Server
- IBM Sametime 8.0.2 Community Server
- IBM Sametime 8.5 Community Server
- Microsoft Office Live Communications Server 2005 SP1 Standard or Enterprise
- Microsoft Office Communications Server 2007 Standard or Enterprise
- Microsoft Office Communications Server 2007 R2
- Microsoft Lync Server 2010
- Novell GroupWise Messenger 2.0 or later

Supported features and environments

Item	BlackBerry Enterprise Server
Virtual environment	For information, please visit www.blackberry.com to read KB 29661.
Enhanced network authentication	All BlackBerry Enterprise Server components support RSA Authentication Agent 6.1 for Windows Server 2003 and RSA Authentication Agent 7.0.1 for Windows Server 2008.
IP	BlackBerry Enterprise Server components support only IPv4 for TCP/IP connections.
SNMP monitoring	The BlackBerry Enterprise Server components support the SNMP service.
Remote access	The BlackBerry Enterprise Server components support remote access by administrators who use Remote Desktop Connection.

Unsupported environments

Item	Description
DMZ	The BlackBerry Enterprise Server and BlackBerry Enterprise Server components, with the exception of the BlackBerry Router, do not support installation in a DMZ.
messaging server	The BlackBerry Enterprise Server for Microsoft Exchange (and all BlackBerry Enterprise Server components) does not support installation on the computer that hosts the messaging server.
email application	The BlackBerry Enterprise Server and BlackBerry Enterprise Server components do not support installation on computers that host email applications such as Microsoft Outlook. Email applications use data files that can cause conflicts with the BlackBerry Enterprise Server components. As a result, the BlackBerry Enterprise Server components might not function as expected.
instant messaging server	<p>Any of the following environments:</p> <ul style="list-style-type: none"> • If you configure the BlackBerry Enterprise Server for high availability, the primary BlackBerry Enterprise Server instance and standby BlackBerry Enterprise Server instance do not support more than one type of instant messaging server in a BlackBerry Enterprise Server pair. For example, if you install the BlackBerry Collaboration Service for use with Microsoft Office Communications Server 2007 on the primary instance, you must also install the BlackBerry Collaboration Service for use with Microsoft Office Communications Server 2007 on the standby instance. • A BlackBerry Enterprise Server or BlackBerry Enterprise Server pair that connects to multiple instances of the BlackBerry Collaboration Service does not support more than one type of instant messaging server. You must use the same type of instant messaging server for each local or remote BlackBerry Collaboration Service that you connect to a BlackBerry Enterprise Server or BlackBerry Enterprise Server pair.
BlackBerry Collaboration Service	If you install the BlackBerry Collaboration Service for use with Microsoft Lync Server 2010, the BlackBerry Collaboration Service does not support using <code>ocscore.msi</code> or <code>ucmaredist.msi</code> from the Microsoft Lync Server 2010 installation files on the computer that you install the BlackBerry Collaboration Service on. You must use <code>ocscore.msi</code> and <code>ucmaredist.msi</code> from Microsoft Office

Item	Description
BlackBerry Attachment Service	Communications Server 2007 R2. For more information, visit the Volume Licensing Service Center at www.microsoft.com .
Remote Desktop Services or Terminal Services	You must install the software update for KB22953 on Windows Server 2008 if you want the BlackBerry Attachment Service to support .mp3 audio files on BlackBerry devices and all audio formats on BlackBerry 7100 Series devices that support CDMA networks. To download the software update for KB22953, visit www.blackberry.com/support/downloads/ .
Remote Desktop Services or Terminal Services	The BlackBerry Enterprise Server and BlackBerry Enterprise Server components do not support installation on a computer that you installed Remote Desktop Services or Terminal Services on.

Preinstallation tasks

5

Configuring a Microsoft Exchange 2010 messaging environment

Create a Windows account that has a Microsoft Exchange 2010 mailbox

You must create a Windows account with a Microsoft Exchange 2010 mailbox so that the Windows account can authenticate with the Microsoft Exchange Server.

Before you begin: If you want free/busy lookups to work in Microsoft Outlook 2003 and earlier, you must configure Microsoft Exchange 2010 to support Microsoft Outlook 2003 and earlier by creating a public folder database. For more information about supporting Microsoft Outlook 2003 and earlier, visit <http://support.microsoft.com> to read article 555851 and visit <http://technet.microsoft.com> to read articles 123694, 124270, 397221, and 691120.

1. On the computer that hosts Microsoft Exchange, log in using an administrator account that has the permission to create accounts.
2. Open the Microsoft Exchange Management Console.
3. Create an account and mailbox that you name **BESAdmin**.
4. To permit the BlackBerry Enterprise Server to check if a BlackBerry device user has permission to access a public folder, assign the Owner permission for all public folders to the administrator account.

After you finish:

- To verify that you created the Windows account, log in to a computer using the Windows account.
- Verify that the Windows account is not a member of the Domain Administrators group in Microsoft Active Directory.
- Verify that BlackBerry device users have Read permissions and Visible permissions to public folders.
- To permit BlackBerry device users to check the availability of meeting participants using BlackBerry Device Software 4.5 or later, configure the Schedule+ Free/Busy information for the system public folder. For more information, visit <http://technet.microsoft.com> to read articles 629523 and 691129.

Configure Microsoft Exchange 2010 permissions for the Windows account

Before you begin:

Verify the domain name in Microsoft Active Directory. When you set the permissions, you must match the domain name in Microsoft Active Directory.

1. On a computer that hosts the Microsoft Exchange Management Shell, open the Microsoft Exchange Management Shell.
2. Type **Get-MailboxDatabase | Add-ADPermission -User "BESAdmin" -AccessRights ExtendedRight -ExtendedRights Receive-As, ms-Exch-Store-Admin, ms-Exch-Store-Visible**.
3. Type **Add-RoleGroupMember "View-Only Organization Management" -Member "BESAdmin"**.
4. Do one of the following:

- To set the permissions at the organizational unit level, type the following command:

```
Add-ADPermission -InheritedObjectType User -InheritanceType Descendants -ExtendedRights Send-As -User "BESAdmin" -Identity "OU=<organizational_unit>,DC=<domain_1>,DC=<domain_2>,DC=<domain_3>"
```

For example, if the organizational unit is Texas and the domain name is example.organization.net, type **Texas** for *<organizational_unit>*, **example** for *<domain_1>*, **organization** for *<domain_2>*, and **net** for *<domain_3>*.

- To set the permissions at the common name level, type the following command:

```
Add-ADPermission -InheritedObjectType User -InheritanceType Descendants -ExtendedRights Send-As -User "BESAdmin" -Identity "CN=<common_name>,DC=<domain_1>,DC=<domain_2>,DC=<domain_3>"
```

For example, if the common name is Users and the domain name is example.organization.net, type **Users** for *<common_name>*, **example** for *<domain_1>*, **organization** for *<domain_2>*, and **net** for *<domain_3>*.

In each command, *<domain_1>*, *<domain_2>*, and *<domain_3>* form the internal Microsoft Active Directory domain (if internal and external domain names are different). You can contact your Microsoft Active Directory administrator for information about distinguished names.

After you finish: If you create a mailbox database for Microsoft Exchange, repeat step 2.

Increase the maximum number of connections to the Address Book service in Microsoft Exchange 2010

By default, Microsoft Exchange 2010 limits the maximum number of connections from the BlackBerry Enterprise Server to the Address Book service to 50. To permit the BlackBerry Enterprise Server to run, you must increase the number of permitted connections to a large value (for example, 100,000).

Before you begin: You must complete this task if the messaging server that the BlackBerry Enterprise Server uses is Microsoft Exchange 2010. If the messaging server is Microsoft Exchange 2010 SP1, you can change the MaxSessionsPerUser settings using client throttling policies.

1. On the computer that hosts the Microsoft Exchange CAS server, in `<drive>:\Program Files\Microsoft\Exchange Server\V14\Bin`, in a text editor, open the **microsoft.exchange.addressbook.service.exe.config** file.
2. Change the value of the MaxSessionsPerUser key to **100000**.
3. Save and close the file.
4. Restart the Address Book service.

Turn off client throttling in Microsoft Exchange 2010

By default, Microsoft Exchange 2010 uses client throttling policies to track the bandwidth that each Microsoft Exchange user consumes and enforce bandwidth limits as necessary. The policies affect the performance of the BlackBerry Enterprise Server, so you should turn off client throttling for the Windows account that has a Microsoft Exchange mailbox.

1. On a computer that hosts the Microsoft Exchange Management Shell, open the Microsoft Exchange Management Shell.
2. Type **New-ThrottlingPolicy BESPOLICY**.
3. Type the following command:
Set-ThrottlingPolicy BESPOLICY -RCAMaxConcurrency \$null -RCAPercentTimeInAD \$null -RCAPercentTimeInCAS \$null -RCAPercentTimeInMailboxRPC \$null -EWSMaxConcurrency \$null -EWSPercentTimeInAD \$null -EWSPercentTimeInCAS \$null -EWSPercentTimeInMailboxRPC \$null -EWSMaxSubscriptions \$null -EWSFastSearchTimeoutInSeconds \$null -EWSFindCountLimit \$null
4. Type **Set-Mailbox "BESAdmin" -ThrottlingPolicy BESPOLICY**.

Configure a management role and scope for Microsoft Exchange Web Services

If you want the BlackBerry Enterprise Server to use Microsoft Exchange Web Services to manage calendars on BlackBerry devices, you must configure a management role and scope for Microsoft Exchange Web Services in Microsoft Exchange 2010.

For more information about configuring the BlackBerry Enterprise Server to use Microsoft Exchange Web Services, see the *BlackBerry Enterprise Server Administration Guide*.

1. On a computer that hosts the Microsoft Exchange Management Shell, open the Microsoft Exchange Management Shell.
2. Do one or more of the following:

- To enable a service account for all users in an organization, type the following command:
New-ManagementRoleAssignment -Name: <role_name> -Role ApplicationImpersonation -User: <account_name>
- To create a management scope for a specific group, type the following command:
New-ManagementScope -Name: <scope_name> –RecipientRestrictionFilter: <member_names> - RecipientRoot: <domain_name>
- To enable a service account for all users in a scope, type the following command:
New-ManagementRoleAssignment –Name: <role_name> –Role ApplicationImpersonation –User: <account_name> –CustomRecipientWriteScope: <scope_name>

Configure the BlackBerry Enterprise Server to run without public folders

If you did not install any public folders in Microsoft Exchange, you must configure the BlackBerry Enterprise Server to run without public folders by changing a registry key.

1. On each computer that hosts the BlackBerry Enterprise Server, click **Start > Run**.
2. In the **Open** field, type **regedit**.
3. Click **OK**.
4. Perform one of the following actions:
 - If you are running a 32-bit version of Windows, navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows Messaging Subsystem\CDO.
 - If you are running a 64-bit version of Windows, navigate to HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Microsoft\Windows Messaging Subsystem.
5. If the **CDO** registry key does not exist, create a registry key that you name **CDO**.
6. In the **CDO** registry key, if the DWORD value does not exist, create a DWORD value that you name **Ignore No PF**.
7. Change the DWORD value to **1**.
8. Click **OK**.

Permit meeting requests from outside of your organization when using Microsoft Exchange Web Services for Microsoft Exchange 2010

By default, the BlackBerry Enterprise Server uses Microsoft Exchange Web Services to manage calendars on BlackBerry devices. Each time you add a new Microsoft Exchange mailbox, you must configure the calendar settings in Microsoft Exchange to permit BlackBerry device users to receive meeting requests from outside of your organization when using Microsoft Exchange Web Services.

1. On a computer that hosts the Microsoft Exchange Management Shell, open the Microsoft Exchange Management Shell.
2. For each Microsoft Exchange Server that hosts users, type the following command:
Get-Mailbox -server<messaging-server name> | Set-CalendarProcessing -ProcessExternalMeetingMessages \$true

Configuring a Microsoft Exchange 2007 messaging environment

Create a Windows account that has a Microsoft Exchange 2007 mailbox

You must create a Windows account that has a Microsoft Exchange 2007 mailbox so that the Windows account can authenticate with the Microsoft Exchange Server.

Before you begin: You must configure Microsoft Exchange 2007 to support versions of Microsoft Outlook that are earlier than 2007 by creating a public folder database. For more information about supporting versions of Microsoft Outlook that are earlier than 2007, visit <http://support.microsoft.com> to read article 555851 and visit <http://technet.microsoft.com> to read articles 123694, 124270, 397221, and 691120.

1. On the computer that hosts Microsoft Exchange, log in using an administrator account that has the correct permission to create accounts.
2. Open the Microsoft Exchange Management Console.
3. Create an account and mailbox that you name **BESAdmin**.

4. To permit the BlackBerry Enterprise Server to check if a user has permissions for a public folder, assign the Owner permission for all public folders to the administrator account.

After you finish:

- To verify that you created the Windows account, log in to a computer using the Windows account.
- Verify that the Windows account is not a member of the Domain Administrators group in Microsoft Active Directory.
- Verify that BlackBerry device users have Read and Visible permissions to public folders.
- To permit BlackBerry device users to check the availability of meeting participants in BlackBerry Device Software 4.5 or later, configure the Schedule+ Free/Busy information for the system public folder. For more information, visit <http://technet.microsoft.com> to read articles 629523 and 691129.

Configure Microsoft Exchange 2007 permissions for the Windows account

1. On a computer that hosts the Microsoft Exchange Management Shell, open the Microsoft Exchange Management Shell.
2. Perform one of the following actions:
 - If you log in to Microsoft Exchange Server 2007, type **add-exchangeadministrator "BESAdmin" -role ViewOnlyAdmin**.
 - If you log in to another computer, type **get-mailboxserver "< messaging_server_name >" | add-exchangeadministrator "BESAdmin" -role ViewOnlyAdmin**.
3. For each Microsoft Exchange Server 2007 instance that hosts BlackBerry device users, type the following command:
get-mailboxserver "< messaging_server_name >" | add-adpermission -user "BESAdmin" -accessrights ExtendedRight -extendedrights Receive-As, ms-Exch-Store-Admin

Permit users to send email messages in a Microsoft Exchange environment

To permit BlackBerry device users to send email messages, you must configure Send As permissions for the Microsoft Active Directory user object that contains users. This task describes how to configure the Send As permissions for the entire Windows domain, but you can also configure the permissions at the user object level or on a container of user objects.

For more information about Send As permissions and the BlackBerry Enterprise Server, visit www.blackberry.com/btsc to read article KB04707. For more information about assigning Send As permissions to multiple user accounts, visit support.microsoft.com to read article 912918.

1. Log in to a computer in the Windows domain as an administrator that has permissions to change user objects in Microsoft Active Directory.
2. On the taskbar, click **Start > Administrative Tools > Active Directory Users and Computers**.
3. On the **View** menu, click **Advanced Features**.
4. Right-click the domain root. Click **Properties**.
5. On the **Security** tab, click **Advanced**.
6. Click **Add**.
7. Type the name of the Windows account that you created (for example, BESAdmin).
8. Click **Check Names**.
9. Click **OK**.
10. Perform one of the following actions:
 - If you are running Windows Server 2003, in the **Apply** drop-down list, click **User Objects**.
 - If you are running Windows Server 2008, in the **Apply** drop-down list, click **Descendant User Objects**.
11. In the **Allow** column, select the **Send As** check box.
12. Click **Apply**.
13. Click **OK**.

Permit meeting requests from outside of your organization when using Microsoft Exchange Web Services for Microsoft Exchange 2007

By default, the BlackBerry Enterprise Server uses Microsoft Exchange Web Services to manage calendars on BlackBerry devices. Each time you add a new Microsoft Exchange mailbox, you must configure the calendar settings in Microsoft Exchange to permit BlackBerry device users to receive meeting requests from outside of your organization when using Microsoft Exchange Web Services.

1. On a computer that hosts the Microsoft Exchange Management Shell, open the Microsoft Exchange Management Shell.
2. For each Microsoft Exchange Server that hosts users, type the following command:
Get-Mailbox -server<messaging-server name> | Set-MailboxCalendarSettings -ProcessExternalMeetingMessages \$true

Configuring a Microsoft Exchange 2003 messaging environment

Create a Windows account that has a Microsoft Exchange 2003 mailbox

You must create a Windows account that has a Microsoft Exchange 2003 mailbox so that the Windows account can authenticate with the Microsoft Exchange messaging server.

1. On any computer in the Windows domain, on the taskbar, click **Start > Programs > Microsoft Exchange > Active Directory Users and Computers**.
2. Create an account that has the following attributes:
 - **Name:** BESAdmin
 - **Group membership:** Domain User
3. Create a Microsoft Exchange mailbox for the account.
4. To activate the new mailbox, send a test email message.

After you finish:

If you cannot see the Windows account in the Microsoft Active Directory to verify that you created it, log in to a computer using the Windows account.

For more information about the Send As permission and the BlackBerry Enterprise Server, visit www.blackberry.com to read KB04707.

For more information about assigning the Send As permission to multiple user accounts, visit www.support.microsoft.com to read article 912918.

Configure Microsoft Exchange 2003 permissions for the Windows account

On each Microsoft Exchange 2003 server that hosts BlackBerry device users, you must configure Microsoft Exchange permissions for the Windows account (for example, BESAdmin) that you want to use to install the BlackBerry Enterprise Server components.

This task describes how to configure the Microsoft Exchange permissions at the administrative group level for every Microsoft Exchange 2003 server that hosts BlackBerry device users but you can also configure the permissions at other levels, such as at the root of the organization or another administrative group.

1. On the computer that hosts the Microsoft Exchange 2003 System Manager, open the Microsoft Exchange 2003 System Manager.
2. Configure the Exchange View Only Administrator permission for the Windows account in the administrative group that contains the Microsoft Exchange 2003 servers that host BlackBerry device users.
3. On each Microsoft Exchange 2003 server that hosts BlackBerry device users, assign the following permissions to the Windows account:
 - Send As
 - Receive As
 - Administer Information Store
4. To permit the BlackBerry Enterprise Server to check if users have permissions to access a public folder, assign the Owner permission for all public folders to the Windows account.

After you finish: Verify that the users have Read and Visible permissions to public folders.

Permit users to send email messages in a Microsoft Exchange environment

To permit BlackBerry device users to send email messages, you must configure Send As permissions for the Microsoft Active Directory user object that contains users. This task describes how to configure the Send As permissions for the entire Windows domain, but you can also configure the permissions at the user object level or on a container of user objects.

For more information about Send As permissions and the BlackBerry Enterprise Server, visit www.blackberry.com/btsc to read article KB04707. For more information about assigning Send As permissions to multiple user accounts, visit support.microsoft.com to read article 912918.

1. Log in to a computer in the Windows domain as an administrator that has permissions to change user objects in Microsoft Active Directory.
2. On the taskbar, click **Start > Administrative Tools > Active Directory Users and Computers**.
3. On the **View** menu, click **Advanced Features**.
4. Right-click the domain root. Click **Properties**.
5. On the **Security** tab, click **Advanced**.
6. Click **Add**.
7. Type the name of the Windows account that you created (for example, BESAdmin).
8. Click **Check Names**.

9. Click **OK**.
10. Perform one of the following actions:
 - If you are running Windows Server 2003, in the **Apply** drop-down list, click **User Objects**.
 - If you are running Windows Server 2008, in the **Apply** drop-down list, click **Descendant User Objects**.
11. In the **Allow** column, select the **Send As** check box.
12. Click **Apply**.
13. Click **OK**.

Configure permissions for the Windows account

On each computer that you want to install the BlackBerry Enterprise Server components on, you must configure permissions for the Windows account that you want to use to install the BlackBerry Enterprise Server components and run the services for the BlackBerry Enterprise Server.

Without the correct permissions, the BlackBerry Enterprise Server cannot run.

1. Right-click **My Computer**. Click **Manage**.
2. In the left pane, expand **Local Users and Groups**.
3. Navigate to the **Groups** folder.
4. In the right pane, double-click **Administrators**.
5. Click **Add**.
6. In the **Enter the object names to select** field, type the Windows account name that you want the services for the BlackBerry Enterprise Server to use (for example, BESAdmin).
7. Click **OK**.
8. Click **Apply**.
9. Click **OK**.
10. On the taskbar, click **Start > Programs > Administrative Tools > Local Security Policy**.
11. Configure the following permissions for the Windows account:
 - log on locally with local permissions (if not assigned by default)
 - log on as a service
12. On the taskbar, click **Start > Programs > Administrative Tools > Computer Management**.

13. Add the Windows account to the local administrators group.

Prevent the Microsoft Exchange known issues for wireless calendar synchronization

Some known issues for Microsoft Exchange impact how the BlackBerry Enterprise Server synchronizes calendars over the wireless network. To prevent the known issues from occurring, you can read about the known issues for Microsoft Exchange that might impact your organization's messaging environment and install the hotfixes for them. If your organization's messaging environment includes multiple messaging servers, you can resolve the known issues that apply to the latest Microsoft Exchange software version in your organization's environment.

If you do not install the correct hotfixes, the BlackBerry Enterprise Server cannot run.

1. Visit <http://support.microsoft.com> to read articles 823343 and 894470.
2. Verify that your organization's environment meets the requirements that are described in the applicable known issues.
3. Download the hotfixes for the known issues on the computers that you want to install the BlackBerry Enterprise Server or BlackBerry Administration Service on.
4. Install the hotfixes.

Verify if the Windows account can access a user account in Microsoft Exchange

The BlackBerry Enterprise Server requires permission to access each BlackBerry device user's mailbox to process email messages. The IEMSText.exe tool runs a test to verify whether the Windows account has the Send As permission in Microsoft Exchange so that the BlackBerry Enterprise Server can access user accounts. The IEMSText.exe tool does not verify whether the BlackBerry Enterprise Server can send email messages on behalf of a BlackBerry device user.

1. Copy the BlackBerry Enterprise Server installation files to the computer that you want to install the BlackBerry Enterprise Server on.
2. Extract the contents to a folder on the computer.
3. Navigate to `<extracted_folder>\Tools`.
4. Double-click **IEMSTest.exe**.

5. In the **Profile Name** drop-down list, select the profile names for the user accounts.
6. Click **OK**.
7. In the left pane, select the user accounts that you want to check.
8. Click **Select**.
9. Click **OK**.

Configuring connections for the BlackBerry Enterprise Server database

The database for the BlackBerry Enterprise Server is the BlackBerry Configuration Database. You create the BlackBerry Configuration Database when you install a BlackBerry Enterprise Server or BlackBerry Administration Service or when you run the CreateDB executable.

The BlackBerry Enterprise Server can connect to its database on the Microsoft SQL Server using Windows authentication or database authentication. By default, the BlackBerry Enterprise Server logs in to its database using the Windows account that you use to complete the installation process or the database credentials you provided during the installation process.

To support database mirroring for the BlackBerry Configuration Database with Microsoft SQL Server 2005 or Microsoft SQL Server 2008, you must use Windows authentication.

Specifying permissions when you connect to the BlackBerry Configuration Database using Windows authentication or Microsoft SQL Server authentication

If you connect the BlackBerry Enterprise Server to the BlackBerry Configuration Database using Windows authentication or Microsoft SQL Server authentication during the BlackBerry Enterprise Server installation process, the Windows account or Microsoft SQL Server account that you specify must have database permissions on the database server. The type of permissions that you specify is determined by the setup option that you select and whether you create the BlackBerry Configuration Database on the computer that hosts the BlackBerry Enterprise Server components or on another database server.

Specifying permissions for the Windows account or Microsoft SQL Server account

If you install Microsoft SQL Server 2008 R2 Express Edition during the BlackBerry Enterprise Server installation process, you might need to specify permissions for the Windows account or Microsoft SQL Server account, depending on the type of authentication you select.

When you select Windows authentication during the BlackBerry Enterprise Server installation process, the setup application automatically assigns the required permissions to the Windows account that you use to complete the installation process.

When you select Microsoft SQL Server authentication during the BlackBerry Enterprise Server installation process, you must assign the required database permissions to the Microsoft SQL Server account that you use to complete the installation process.

Assign permissions to the Windows account or Microsoft SQL Server account

Perform one of the following actions:

- If you create the BlackBerry Configuration Database on the computer that hosts the BlackBerry Enterprise Server and you require the setup application to install Microsoft SQL Server Express during the installation process and you choose Windows authentication, you are not required to assign Microsoft SQL Server permissions to the Windows account. If you want the setup application to install the BlackBerry database notification system, you must assign the Microsoft SQL Server permission for the database system administrator (also called the sysadmin server role in Microsoft SQL Server Management Studio) to the Windows account.
- If you create the BlackBerry Configuration Database on the computer that hosts the BlackBerry Enterprise Server and you require the setup application to install Microsoft SQL Server Express during the installation process and you choose Microsoft SQL Server authentication, you must assign the database creator (dbcreator server role) Microsoft SQL Server permission to the Microsoft SQL Server account. If you want the setup application to install the BlackBerry database notification system, you must assign the Microsoft SQL Server permission for the database system administrator (also called the sysadmin server role in Microsoft SQL Server Management Studio) to the Microsoft SQL Server account.
- If you create the BlackBerry Configuration Database on the computer that hosts the BlackBerry Enterprise Server and the computer already hosts a Microsoft SQL Server, you must assign the database creator (dbcreator server role) Microsoft SQL Server permission to the Windows account or Microsoft SQL Server account that you use to complete the BlackBerry Enterprise Server installation process. If you want the setup application to install the BlackBerry database notification system, you must assign the Microsoft SQL Server permission for the database system administrator (also called the sysadmin server role in Microsoft SQL Server Management Studio) to the Windows account or Microsoft SQL Server account.
- If you create the BlackBerry Configuration Database on a computer that does not host the BlackBerry Enterprise Server, you must assign the database creator (dbcreator server role) Microsoft SQL Server permission to the Windows or Microsoft SQL Server account that you use to complete the BlackBerry Enterprise Server installation process. If you want the setup application to install the BlackBerry database notification system, you must assign the Microsoft SQL Server permission for the database system administrator (also called the sysadmin server role in Microsoft SQL Server Management Studio) to the Windows account or Microsoft SQL Server account.

Create a BlackBerry Configuration Database

If the security required by your organization does not allow applications to have permissions to create or upgrade databases, you can run the CreateDB executable on the database server to create the BlackBerry Configuration Database instead of using the setup application. After you create or upgrade the BlackBerry Configuration Database using the CreateDB executable, you can run the setup application using a Windows account with minimum requirements to the database server.

Before you begin: Verify that the appropriate permissions are configured on the database server.

1. Log in to the computer that hosts the database server using a local administrator account or a Windows account that has SQL administrator permissions.
2. Copy the BlackBerry Enterprise Server installation files to the database server that you want to configure as the host server for the BlackBerry Configuration Database.
3. Extract the contents to a folder on the computer.
4. Navigate to `<extracted_folder>\Database`.
5. Open the **BesMgmt.cfg** file in a text editor.
6. Change the file to include information that is specific to your organization's environment.
7. Save and close the file.
8. Open a command prompt window.
9. Change to `<extracted_folder>\Database`.
10. Type **CreateDB.exe BESMgmt.cfg**.

BESMgmt.cfg properties

Property	Description
CMD	This property specifies the type of action that the CreateDB executable must complete (for example, whether to install or upgrade the BlackBerry Configuration Database).
DATABASE_NAME	This property specifies the name of the BlackBerry Configuration Database.
SERVER	This property specifies the name of the database server that hosts the BlackBerry Configuration Database. If a database instance hosts the BlackBerry Configuration Database, follow the format <i>database_server_name\database_instance_name</i> .
USERID	If you use database authentication, this property specifies the user name of the database account that has server administrator permission and database creator permission.

Property	Description
PASSWORD	If you use database authentication, this property specifies the password for the database account.
SCRIPT_ROOT	This property specifies the path to the DBInstallScripts folder. By default, this folder is in the same root folder that the CreateDB.exe file is located in.
LOG_DIR	This property specifies the path to the folder that you want to create log files in. By default, this folder is in the same root folder that the CreateDB.exe file is located in.
DBMS	This property specifies the database management system that your organization uses.
DB_FILE_DIR	This property specifies an existing folder that you want to save the database files in. By default, this folder is in the same root folder that the CreateDB.exe file is located in.
BACKUP_DIR	This property specifies an existing folder where you want to save the database backup in. By default, this folder is located in the same root folder that the CreateDB.exe file is located in.
BES_TYPE	This property specifies the messaging server that your organization uses.

Install the SNMP service for monitoring by a monitoring application

You must install the SNMP service on each computer that you want to install the BlackBerry Enterprise Server if you want to use a monitoring application to monitor the BlackBerry Enterprise Server activity.

Before you begin: Verify that each computer can access the Windows installation media.

1. On the taskbar, click **Start > Settings > Control Panel > Add/Remove Programs > Add/Remove Windows Components**.
2. Double-click **Management and Monitoring Tools**.
3. Select the **Simple Network Management Protocol** check box.
4. Click **OK**.
5. When Windows Setup prompts you, install the files from the Windows installation media.
6. Complete the installation wizard.

7. In the Windows Services, verify that the SNMP service is running.

After you finish: To complete the SNMP service installation process, after you install the BlackBerry Enterprise Server or BlackBerry Enterprise Server components, configure the SNMP service to monitor the activity of the BlackBerry Enterprise Server or BlackBerry Enterprise Server components.

Creating a BlackBerry Administration Service pool that includes the BlackBerry Web Desktop Manager using DNS round robin

When you install the BlackBerry Administration Service, BlackBerry Web Desktop Manager, or both, the setup application installs the BlackBerry Administration Service services automatically. The BlackBerry Administration Service and BlackBerry Web Desktop Manager require the BlackBerry Administration Service services to run.

If you create a BlackBerry Administration Service pool using DNS round robin, you can install the BlackBerry Administration Service and BlackBerry Web Desktop Manager on each computer in the pool or you can install the BlackBerry Administration Service or BlackBerry Web Desktop Manager on some of the computers in the pool. If you install the BlackBerry Administration Service and BlackBerry Web Desktop Manager on each computer in the pool, you can use the pool name that you specified during the installation process in the URLs for the BlackBerry Administration Service and BlackBerry Web Desktop Manager (for example, https://<pool_name>/webconsole/login or https://<pool_name>/webdesktop/login).

If you do not install both components on each computer in the pool and you try to access one of the URLs using the pool name, the web browser might display an HTTP 404 error message. The HTTP 404 error message occurs when the web browser tries to connect to a computer in the pool that you did not install the component on that you are trying to access. For example, you can install the BlackBerry Administration Service on two of the computers in the pool and the BlackBerry Web Desktop Manager on two other computers in the pool.

To make sure that the web browser does not display HTTP 404 error messages, you can choose one of the following options:

- You can create separate pools within the BlackBerry Administration Service pool for the BlackBerry Administration Service and the BlackBerry Web Desktop Manager. You can provide your organization's administrators and BlackBerry device users with URLs that include the specific pool names.
- You can provide administrators and users in your organization's environment with URLs that include the FQDNs of the computers that you installed the BlackBerry Administration Service or BlackBerry Web Desktop Manager on (for example, https://<FQDN_of_computer>/webconsole/login or https://<FQDN_of_computer>/webdesktop/login).

Create the DNS record for a BlackBerry Administration Service instance

To configure multiple BlackBerry Administration Service instances for high availability using DNS round robin, you must create a DNS record. The DNS record permits the clients of the BlackBerry Administration Service pool to access the instances using a single DNS name. You must create the DNS record in the same domain as the computers that host the BlackBerry Administration Service instances.

Before you begin:

- Configure a static IP address for each computer that you want to install a BlackBerry Administration Service instance on.
- Obtain permission to manage the DNS.
- If you configure DNS round robin, configure clients to resolve the DNS name into a list of IP addresses and distribute traffic equally across the BlackBerry Administration Service instances in the pool.

1. Log in to the DNS server.
2. In the DNS management console, access the forward lookup zone that you want to add the BlackBerry Administration Service instance to.
3. To create a new host, perform the following actions:
 1. In the **Name** field, type the name of the BlackBerry Administration Service pool that you want to use.
 2. In the **IP Address1** field, type the IP address of the computer that you want to host a BlackBerry Administration Service instance on.
 3. Select the **Create associated pointer (PTR) record** check box.
4. Repeat step 3 for each BlackBerry Administration Service instance that you want to install. When you add entries to the same pool, you must use the same pool name for all BlackBerry Administration Service instances.

After you finish: To remove a BlackBerry Administration Service instance from a pool, delete the entry for the IP address of the BlackBerry Administration Service instance from the DNS server.

Preparing the computer that hosts the BlackBerry Collaboration Service for use with Microsoft Office Communications Server 2007 R2

If you plan to install the BlackBerry Collaboration Service for use with Microsoft Office Communications Server 2007 R2, you must verify that the computer that you install the BlackBerry Collaboration Service on includes the required items.

Before you install the BlackBerry Collaboration Service, you must perform the following actions in the order that they are listed below:

1. Install and enable Microsoft .NET Framework 3.5 SP1 (if you installed Microsoft .NET Framework 4.0, visit support.microsoft.com to read article 2224981 before you continue).
2. For the following steps, use the install packages included with the Microsoft Office Communications Server 2007 R2 installation files. For steps a and b, you can find the files in Setup\amd64, and for steps c and d, you can find the files in Setup\amd64\Setup.
 - a Install Microsoft Visual C++ 2008 Redistributable Package (vc redistributable_x64.exe).
 - b Install Microsoft SQL Server Native Client (sqlncli_x64.msi).
 - c Install Microsoft Unified Communications Managed API 2.0 Core Redist 64-bit (ucmaredist.msi).
 - d Install Microsoft Office Communications Server 2007 R2, Core Components (ocscore.msi).
3. Install the required certificate in the Personal Certificate folder for the local computer account. You must choose the Web Server Certificate template and specify the following information:
 - For the Subject Name, type the FQDN of the computer that you install the BlackBerry Collaboration Service on.
 - For the Friendly Name, type **OCSCconnector**.

To download the install packages, visit the Microsoft Download Center or the Volume Licensing Service Center at www.microsoft.com.

For more information about installing the required certificate, visit www.blackberry.com/btsc to read article KB24960.

Preparing the computer that hosts the BlackBerry Collaboration Service for use with Microsoft Lync Server 2010

If you plan to install the BlackBerry Collaboration Service for use with Microsoft Lync Server 2010, you must verify that the computer that you install the BlackBerry Collaboration Service on includes the required items.

Before you install the BlackBerry Collaboration Service, you must perform the following actions in the order that they are listed below:

1. Install and enable Microsoft .NET Framework 3.5 SP1 (if you installed Microsoft .NET Framework 4.0, visit support.microsoft.com to read article 2224981 before you continue).
2. For the following steps, use the install packages included with Microsoft Lync Server 2010 installation files. You can find the files in Setup\amd64.
 - a Install Microsoft Visual C++ 2008 Redistributable Package (vc redistrib_x64.exe).
 - b Install Microsoft SQL Server Native Client (sqlncli_x64.msi).
3. For the following steps, you need to download the software from the Volume Licensing Service Center at www.microsoft.com.
 - a Install Microsoft Unified Communications Managed API 2.0 Core Redist 64-bit (ucmaredist.msi).
 - b Install Microsoft Office Communications Server 2007 R2, Core Components (ocscore.msi).
4. Install the required certificate in the Personal Certificate folder for the local computer account. You must choose the Web Server Certificate template and specify the following information:
 - For the Subject Name, type the FQDN of the Microsoft Lync Server 2010 pool.
 - For the Subject Alternative Names, type the FQDN of the Microsoft Lync Server 2010 pool and the FQDN of the computer that you install the BlackBerry Collaboration Service on.
 - For the Friendly Name, type **OCSCconnector**.

The BlackBerry Collaboration Service supports Microsoft Unified Communications Managed API 2.0 and must use Microsoft Office Communications Server 2007 R2, Core Components to take advantage of the backwards compatibility of Microsoft Lync Server 2010 with Microsoft Unified Communications Managed API 2.0. The BlackBerry Collaboration Service does not support using ocscore.msi or ucmaredist.msi from the Microsoft Lync Server 2010 installation files.

To download the install packages, visit the Microsoft Download Center or the Volume Licensing Service Center at www.microsoft.com.

For more information about installing the required certificate, visit www.blackberry.com/btsc to read article KB24960.

Persistent socket connections for the BlackBerry Collaboration Service

Instant messaging environment	BlackBerry Collaboration Service requirements
Microsoft Office Live Communications Server 2005 or Microsoft Office Communications Server 2007, and TLS communication protocol	one persistent socket connection for each instant messaging session
Microsoft Office Live Communications Server 2005 or Microsoft Office Communications Server 2007, and TCP communication protocol	three persistent socket connections for each instant messaging session
Microsoft Office Live Communications Server 2005 or Microsoft Office Communications Server 2007, and HTTPS communication protocol	one persistent socket connection and multiple sequential socket connections for each instant messaging session
IBM Sametime	three persistent socket connections to create one TCP connection; all instant messaging sessions use that TCP connection
Novell GroupWise Messenger	one persistent socket connection for each instant messaging session

Microsoft Office Communications Server 2007 R2 and Microsoft Lync Server 2010 do not require any persistent socket connections, you can use a small pool of shared connections for instant messaging sessions instead.

Applications that are installed with the BlackBerry Enterprise Server components

You can use the BlackBerry Enterprise Server installation process to install third-party applications.

Application	BlackBerry Enterprise Server components that the application is installed with
JDK 1.6.x	<ul style="list-style-type: none"> • BlackBerry Enterprise Server (core) • BlackBerry Administration Service
JRE 1.6.x	<ul style="list-style-type: none"> • BlackBerry Enterprise Server (core) • BlackBerry Administration Service • BlackBerry Collaboration Service • BlackBerry MDS Connection Service
Microsoft XML Core Services 6.0 SP2	<ul style="list-style-type: none"> • All components except the BlackBerry Router
Microsoft SQL Server 2008 R2 Express Edition (if selected)	<ul style="list-style-type: none"> • BlackBerry Administration Service • Any other components
Microsoft .NET Framework 2.0 (if you are installing Microsoft SQL Server Express)	<ul style="list-style-type: none"> • All components
Microsoft .NET Framework 3.5 SP1 (if you are installing Microsoft Office Communications Server 2007 R2 or Microsoft Lync Server 2010)	<ul style="list-style-type: none"> • BlackBerry Collaboration Service

Installing the BlackBerry Enterprise Server software

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Prerequisites: Installing the BlackBerry Enterprise Server software

- Verify that the Windows account that you use to install the BlackBerry Enterprise Server software is assigned the local administrator permission on the computer that you perform the installation process on.
- Verify that the Windows account that you want to use to install the BlackBerry Enterprise Server software is not a member of the Domain Admins group in Microsoft Active Directory.
- In a Microsoft Exchange 2003 environment, to start the MAPI subsystem, open the Microsoft Exchange System Manager.
- In a Windows Server 2003 environment, to install Microsoft SQL Server 2008 R2 Express Edition during the installation of BlackBerry Enterprise Server, you must install Windows PowerShell 1.0, Microsoft .NET Framework 3.5 SP1, and Microsoft Windows Installer 4.5 before you run the BlackBerry Enterprise Server setup application.
- If your organization's domain controllers are running on Windows Server 2008, verify that the number of NSPI connections that the BlackBerry Enterprise Server can make to the Microsoft Exchange Server meets the requirements of your organization. For more information, visit www.blackberry.com/btsc to read article KB17325 and visit support.microsoft.com to read article 949469.
- Retrieve the following information:
 - BlackBerry CAL key
 - SRP host (in BlackBerry Enterprise Server version 5.0 and later, the format of the SRP host is different from earlier versions)
 - SRP identifier
 - SRP authentication key
 - computer name and port number of the instant messaging server (For Microsoft Office Live Communications Server 2005 and Microsoft Office Communications Server 2007 use the virtual server name and port number where the AJAX service is installed.)

- computer name and port number of the proxy server (if applicable)
- Add the blackberry.net domain to the permitted lists in the antivirus application or anti-spam application that the messaging server or gateway uses.
- Verify that the computer has access to www.blackberry.com (optional).
- If your organization uses a proxy server for Internet access, get the credentials for the proxy server.
- Verify that you installed the appropriate languages and text services on the computer that you use to install the BlackBerry Enterprise Server, including code page 20127 (US-ASCII) which is required for all supported languages.
- If you want to install Microsoft SQL Server 2008 R2 Express Edition on a computer that does not host any BlackBerry Enterprise Server components, you can navigate to the Tools folder in the BlackBerry Enterprise Server installation files and run Sqlexpr.exe.
- If you are installing the BlackBerry Administration Service, verify that the computers that host the BlackBerry Administration Service and BlackBerry Configuration Database are not separated by a WAN bridge.
- If you are performing the installation on a computer that has more than one NIC, verify that the production NIC is first in the bind order in the Windows network settings.

Install the BlackBerry Enterprise Server software

Note: To manage the BlackBerry Enterprise Server, you must install the BlackBerry Administration Service. You can install the BlackBerry Administration Service on the computer that hosts the BlackBerry Enterprise Server or on a separate computer. You must install the BlackBerry Administration Service if you create a BlackBerry Configuration Database and you must also either install or upgrade the BlackBerry Administration Service on the computer that you perform the installation process on in the BlackBerry Enterprise Server domain.

1. Log in to the computer that you want to install the BlackBerry Enterprise Server on using the Windows account that you created and that has correct permissions. This account runs the BlackBerry Enterprise Server services.
2. In the BlackBerry Enterprise Server installation files, double-click **setup.exe**. If your operating system is Windows Server 2008, run **setup.exe** as an administrator.
3. In the **Setup type** dialog box, select one of the following options:
 - If this installation process is the first installation of BlackBerry Enterprise Server software in a BlackBerry Enterprise Server domain, select **Create a BlackBerry Configuration Database**.
 - For all other installations of the BlackBerry Enterprise Server software, select **Use an existing BlackBerry Configuration Database**.
4. In the **Setup options** dialog box, you can select or remove BlackBerry Enterprise Server components from the **Additional Components** list.

5. In the **Accounts and Folders** dialog box, in the **Name** field, type the name of the BlackBerry Enterprise Server that you want the BlackBerry Administration Service to display.
6. After the setup application installs the necessary components, click **Continue**.
7. In the **Database information** dialog box, if you configured the database server to use static ports, select the **Static** option. If the static port number is not 1433, in the **Port** field, type the port number.
8. In the **Database mirroring options** dialog box, if you want to configure database mirroring, select the **Add support for database mirroring** check box and in the **Name of the mirror database server** field, type the name of the database server that hosts the mirror database. The setup application does not create the BlackBerry Configuration Database on the mirror Microsoft SQL Server; it adds a registry key to the computer that includes the name of the mirror Microsoft SQL Server.
9. In the **MAPI Settings** dialog box, perform the following actions:
 - a. In the **Microsoft Exchange server** field, type the name of the Microsoft Exchange server.
 - b. In the **Mailbox** field, type the name of the administrator that has the appropriate permissions.
 - c. Click **Check Name**.
 - d. Click **OK**.
10. In the **Administration settings** dialog box, perform the following actions:
 - In the **Pool name** field, type an FQDN that the setup application can use to create the BlackBerry Administration Service web address. If you install only one BlackBerry Administration Service instance in the BlackBerry Enterprise Server domain, you can accept the default pool name. If you install more than one BlackBerry Administration Service instance in the BlackBerry Enterprise Server domain, you must create a DNS entry for the pool name that is not the name of a computer and is mapped to the IP address of each BlackBerry Administration Service instance.
 - In the **New password** and **Confirm password** fields, type the password for the SSL certificate that the BlackBerry Administration Service uses to authenticate with browsers. You must use the same password for every BlackBerry Administration Service instance in the BlackBerry Enterprise Server domain.
11. In the **Microsoft® Active Directory® settings** dialog box, in the **User password** field, type the password for the Microsoft Active Directory account (for example, BESAdmin) that the BlackBerry Enterprise Server uses to authenticate with Microsoft Active Directory. If you want to specify a different username and Windows domain, you must make sure that the Windows domain belongs to the same Microsoft Active Directory forest as the Microsoft Exchange organization.
12. In the **Advanced administration settings** dialog box, perform one of the following actions:
 - If you select **Use Windows authentication**, you can choose to use the Microsoft Active Directory account that you used in the previous step, or you can specify login information for a Microsoft Active Directory administrator.
 - If you select **Use BlackBerry Administration Service authentication**, type and confirm a password for the BlackBerry Administration Service administrator account. Consider using the minimum rules for password complexity when you create the password for the administrator account. The password should be at least 8 characters in length and contain at least one number, letter, and special character, and should not contain dictionary words.

You use the login information that you specify to log in to the BlackBerry Administration Service for the first time.

13. Start the services for the BlackBerry Enterprise Server. If you installed the BlackBerry Administration Service, the setup application waits until the BlackBerry Administration Service services are running before the setup application continues.
14. In the **Console addresses** dialog box, copy the web addresses for the BlackBerry Enterprise Server components and paste them into a document for future reference. You can use the web addresses to log in to the BlackBerry Enterprise Server components that you installed.

After you finish:

- To verify that the BlackBerry Configuration Database on a Microsoft SQL Server uses the appropriate collation setting, check that the collation setting for the BlackBerry Configuration Database is default case-insensitive.
- If you reinstalled the BlackBerry Administration Service, in , delete the cache.

Specifying a name for the BlackBerry Administration Service pool during the installation process

During the installation process, the setup application prompts you to specify the name of the BlackBerry Administration Service pool.

The BlackBerry Administration Service instances use the pool name for interprocess communication and when you configure BlackBerry Administration Service high availability using DNS round robin. You must specify a valid DNS host name during the installation process, even if you do not configure BlackBerry Administration Service high availability using DNS round robin.

The setup application uses the FQDN of the computer that you install the first BlackBerry Administration Service instance on as the default value for the pool name. If you keep the default value and configure BlackBerry Administration Service high availability using DNS round robin at a later time, you must use the BlackBerry Configuration Panel to change the pool name to the host name for the pool.

The name for the BlackBerry Administration Service pool does not impact BlackBerry Administration Service high availability that uses a hardware load balancer.

For more information about BlackBerry Administration Service high availability, see the *BlackBerry Enterprise Server Planning Guide*.

Install a BlackBerry Enterprise Server component on a computer that is separate from the computer that hosts the BlackBerry Enterprise Server

Before you begin:

- Install a BlackBerry Enterprise Server and the BlackBerry Administration Service in your organization's environment.
 - Verify that the BlackBerry Administration Service is running on a Windows account that has permission to access and change the Windows registry on the computer that you want to install the BlackBerry Enterprise Server component on.
 - If you configured database mirroring for the BlackBerry Configuration Database, you must verify that the BlackBerry Enterprise Server is connected to the principal database before you run the setup application.
1. Using the Windows account that you created, log in to the computer that is separate from the computer that hosts the BlackBerry Enterprise Server. This account runs the services for the BlackBerry Enterprise Server components.
 2. In the BlackBerry Enterprise Server installation files, double-click **setup.exe**. If the computer is running Windows Server 2008, run **setup.exe** as an administrator.
 3. In the **Setup type** dialog box, select **Use an existing BlackBerry Configuration Database**.
 4. In the **Database information** dialog box, perform the following actions:
 - Type the names of the database server and BlackBerry Configuration Database that the BlackBerry Enterprise Server uses.
 - If you configured the database server to use static ports, select the **Static** option. If the static port number is not 1433, in the **Port** field, type the port number.
 5. In the **Database mirroring options** dialog box, if you want to configure database mirroring, select the **Add support for database mirroring** check box and type the name of the database server that hosts the mirror database in the **Name of the mirror database server** field. The setup application does not create the BlackBerry Configuration Database on the mirror Microsoft SQL Server; it adds a registry key to the computer that contains the name of the mirror Microsoft SQL Server.
 6. In the **Setup options** dialog box, select or remove BlackBerry Enterprise Server components from the **Additional Components** list.
 7. In the **MAPI Settings** dialog box, perform the following actions:
 - a. In the **Microsoft Exchange server** field, type the name of the Microsoft Exchange server.
 - b. In the **Mailbox** field, type the name of the administrator that is assigned the appropriate permissions.

- c. Click **Check Name**.
 - d. Click **OK**.
8. After the setup application installs the necessary components, click **Continue**.
 9. In the **Administration settings** dialog box, perform the following actions:
 - In the **Pool name** field, type an FQDN that the setup application can use to create the BlackBerry Administration Service web address. If you install only one BlackBerry Administration Service instance in the BlackBerry Enterprise Server domain, you can accept the default pool name. If you install more than one BlackBerry Administration Service instance in the BlackBerry Enterprise Server domain, you must create a DNS entry for the pool name that is not the name of a computer and is mapped to the IP address of each BlackBerry Administration Service instance.
 - In the **New password** and **Confirm password** fields, type the password for the SSL certificate that the BlackBerry Administration Service uses to authenticate with browsers. You must use the same password for every BlackBerry Administration Service instance in the BlackBerry Enterprise Server domain.
 10. In the **Microsoft Active Directory settings** dialog box, in the **User password** field, type the password for the Microsoft Active Directory account (for example, BESAdmin) that the BlackBerry Enterprise Server uses to authenticate with Microsoft Active Directory. If you want to specify a different username and Windows domain, make sure that the Windows domain belongs to the same Microsoft Active Directory forest as the Microsoft Exchange organization.
 11. In the **Advanced administration settings** dialog box, perform one of the following actions:
 - If you select **Use Windows authentication**, you can choose to use the Microsoft Active Directory account that you used in the previous step, or you can specify login information for a Microsoft Active Directory administrator.
 - If you select **Use BlackBerry Administration Service authentication**, type and confirm a password for the BlackBerry Administration Service administrator account. Consider using the minimum rules for password complexity when you create the password for the administrator account. The password should be at least 8 characters in length and contain at least one number, letter, and special character, and should not contain dictionary words.

You use the login information that you specify to log in to the BlackBerry Administration Service for the first time.
 12. In the **Start services** dialog box, start the services for the BlackBerry Enterprise Server components.
 13. In the **Console addresses** dialog box, copy the web addresses for the BlackBerry Enterprise Server components and paste them into a document for future reference. You can use the web addresses to log in to the BlackBerry Enterprise Server components.

After you finish:

- To view the BlackBerry Enterprise Server component in the BlackBerry Administration Service, restart the BlackBerry Administration Service.
- If you reinstalled the BlackBerry Administration Service, in , delete the cache.

Install a standalone BlackBerry Router

A standalone BlackBerry Router is a BlackBerry Router that is hosted by a computer that does not host any other BlackBerry Enterprise Server components except the BlackBerry Controller. The BlackBerry Controller monitors the BlackBerry Router and restarts the BlackBerry Router if it stops responding.

Note: You cannot manage the BlackBerry Controller that monitors a standalone BlackBerry Router in the BlackBerry Administration Service. You must manage the BlackBerry Controller in the BlackBerry Configuration Panel on the computer that hosts the standalone BlackBerry Router.

1. Log in to the computer using the Windows account that you want to use to run the BlackBerry Router.
2. In the BlackBerry Enterprise Server installation files, double-click **Setup.exe**. If your operating system is Windows Server 2008, run **setup.exe** as an administrator.
3. In the **Setup type** dialog box, select **Install a standalone BlackBerry Router**.
4. When you receive a prompt, do not start the BlackBerry Router service until you configure the BlackBerry Router to connect to the BlackBerry Enterprise Server.

Test the connection from the BlackBerry Router to the BlackBerry Infrastructure

To make sure that the BlackBerry Router can connect to the BlackBerry Infrastructure, you can test the connection using the BBSRPTTest tool that is included with the BlackBerry Enterprise Server installation files. The BBSRPTTest tool tries to connect to the BlackBerry Infrastructure using the SRP address and SRP port that you specified for the BlackBerry Infrastructure during the BlackBerry Router installation process.

1. On the computer that you want to test the connection to the BlackBerry Infrastructure on, at a command prompt, navigate to `<drive>:\Program Files\Research In Motion\BlackBerry Enterprise Server`.
2. Type `bbsrptest <srp_address> -<port>`, where `<srp_address>` is the SRP address that you provided during the installation process and `<port>` is the SRP port number. For example, at the command line, type `bbsrptest.exe -host server1.example.com -port 3101`.

After you finish: If the test does not complete, use the Windows Socket (WINSOCK) error code to diagnose the problem. For more information, visit <http://msdn.microsoft.com> to read article *Windows Socket Error Codes*.

Installing a standby BlackBerry Enterprise Server

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To configure the BlackBerry Enterprise Server for high availability and disaster recovery, you install a standby BlackBerry Enterprise Server on a separate computer from your organization's primary BlackBerry Enterprise Server. During the installation process, you assign a standby BlackBerry Enterprise Server to a primary BlackBerry Enterprise Server. You can assign only one standby BlackBerry Enterprise Server to each primary BlackBerry Enterprise Server. The setup application assigns the SRP credentials of the primary BlackBerry Enterprise Server to the standby BlackBerry Enterprise Server automatically.

When you install a standby BlackBerry Enterprise Server, you can install the same BlackBerry Enterprise Server components that are installed on the primary BlackBerry Enterprise Server, or different components. For example, you might want to install additional components with the standby BlackBerry Enterprise Server if you want to use the system resources on the computer to distribute the performance load.

You cannot change a primary BlackBerry Enterprise Server to a standby BlackBerry Enterprise Server by running the setup application again.

By default, the standby BlackBerry Enterprise Server enables you to fail over the following components if they stop responding on the primary BlackBerry Enterprise Server:

- BlackBerry Attachment Service
- BlackBerry Collaboration Service
- BlackBerry Dispatcher
- BlackBerry MDS Connection Service
- BlackBerry Messaging Agent
- BlackBerry Policy Service
- BlackBerry Router
- BlackBerry Synchronization Service

After you complete the installation process, the setup application does not start all the services for the standby BlackBerry Enterprise Server components. For example, the setup application does not start the BlackBerry Mail Store Service, BlackBerry Synchronization Service, or BlackBerry Policy Service. The failover process starts the services when the standby BlackBerry Enterprise Server promotes itself.

For more information about high availability in a large-scale environment, see the *BlackBerry Enterprise Server Planning Guide*.

Install a standby BlackBerry Enterprise Server

Before you begin:

- Install a primary BlackBerry Enterprise Server.
 - If you configured database mirroring for the BlackBerry Configuration Database, you must verify that the primary BlackBerry Enterprise Server is connected to the principal database before you run the setup application.
 - Verify that the BlackBerry Administration Service is running on a Windows account that has permission to access and change the Windows registry on the computer that you want to install the standby BlackBerry Enterprise Server on.
1. Log in to the computer using the Windows account that you used to install the primary BlackBerry Enterprise Server. This account runs the services for the standby BlackBerry Enterprise Server.
 2. In the BlackBerry Enterprise Server installation files, double-click **setup.exe**. If the computer is running Windows Server 2008, run **setup.exe** as an administrator.
 3. In the **Setup type** dialog box, select **Use an existing BlackBerry Configuration Database**.
 4. In the **Database information** dialog box, perform the following actions:
 - Type the names of the database server and BlackBerry Configuration Database that the BlackBerry Enterprise Server uses.
 - If you configured the database server to use static ports, select the **Static** option. If the static port number is not 1433, type the port number in the **Port** field.
 5. In the **Database mirroring options** dialog box, if you want to configure database mirroring, select the **Add support for database mirroring** check box and type the name of the database server that hosts the mirror database in the **Name of the mirror database server** field. The setup application does not create the BlackBerry Configuration Database on the mirror Microsoft SQL Server, it adds a registry key to the computer that includes the name of the mirror Microsoft SQL Server.
 6. In the **MAPI Settings** dialog box, perform the following actions:
 - a. In the **Microsoft Exchange server** field, type the name of the Microsoft Exchange server.
 - b. In the **Mailbox** field, type the name of the administrator that has the appropriate permissions.
 - c. Click **Check Name**.
 - d. Click **OK**.
 7. In the **Setup options** dialog box, perform the following actions:
 - Click **Install a standby BlackBerry Enterprise Server to set up high availability**.

- In the **Additional components** list, select any components that you want to install with the standby BlackBerry Enterprise Server.
8. In the **High availability settings** dialog box, select the primary BlackBerry Enterprise Server that you want to assign the standby BlackBerry Enterprise Server to.
 9. After the setup application installs the necessary components, click **Continue**.
 10. In the **Administration settings** dialog box, perform the following actions:
 - In the **Pool name** field, type an FQDN that the setup application can use to create the BlackBerry Administration Service web address. If you install only one BlackBerry Administration Service instance in the BlackBerry Enterprise Server domain, you can accept the default pool name. If you install more than one BlackBerry Administration Service instance in the BlackBerry Enterprise Server domain, you must create a DNS entry for the pool name that is not the name of a computer and is mapped to the IP address of each BlackBerry Administration Service instance.
 - In the **New password** and **Confirm password** fields, type the password for the SSL certificate that the BlackBerry Administration Service uses to authenticate with browsers. You must use the same password for every BlackBerry Administration Service instance in the BlackBerry Enterprise Server domain.
 11. In the **Microsoft Active Directory settings** dialog box, in the **User password** field, type the password for the Microsoft Active Directory account (for example, BESAdmin) that the standby BlackBerry Enterprise Server uses to authenticate with Microsoft Active Directory. If you want to specify a different username and Windows domain, you must make sure that the Windows domain belongs to the same Microsoft Active Directory forest as the Microsoft Exchange organization.
 12. In the **Advanced administration settings** dialog box, perform one of the following actions:
 - If you select **Use Windows authentication**, you can choose to use the Microsoft Active Directory account that you used in the previous step, or you can specify login information for a Microsoft Active Directory administrator.
 - If you select **Use BlackBerry Administration Service authentication**, type and confirm a password for the BlackBerry Administration Service administrator account. Consider using the minimum rules for password complexity when you create the password for the administrator account. The password should be at least 8 characters in length and contain at least one number, letter, and special character, and should not contain dictionary words.

You use the login information that you specify to log in to the BlackBerry Administration Service for the first time.
 13. Start the services for the standby BlackBerry Enterprise Server.
 14. In the **Console addresses** dialog box, copy the BlackBerry Administration Service web address and paste it into a document for future reference. You can use the web address to log in to the BlackBerry Administration Service.

After you finish:

- To view the standby BlackBerry Enterprise Server information in the BlackBerry Administration Service, restart the BlackBerry Administration Service on every computer that it is installed on in the BlackBerry Enterprise Server domain.
- If you reinstalled the BlackBerry Administration Service, in , delete the cache contents.

Postinstallation tasks

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Test the BlackBerry Enterprise Server installation

1. In the Windows Services, verify that the services for the BlackBerry Enterprise Server are running.
2. In the Windows Event Viewer and log files that are located in `<drive>:\Program Files\Research In Motion\BlackBerry Enterprise Server\Logs`, check for error messages.
3. In the BlackBerry Administration Service, add a test user account.
If you can add a test user account, the connection from the BlackBerry Enterprise Server to the BlackBerry Configuration Database and the messaging server is open.
4. If you installed the BlackBerry MDS Connection Service, browse to `http://<BES_host>:8080`.
If the status page appears, the BlackBerry MDS Connection Service is running.

After you finish: For troubleshooting information, visit www.blackberry.com/support.

Install the BlackBerry database notification system

The BlackBerry database notification system is a publish/subscribe system that is designed to reduce the number of database queries that a BlackBerry Enterprise Server makes to the BlackBerry Configuration Database.

If you create the BlackBerry Configuration Database on the computer that hosts the BlackBerry Enterprise Server, the BlackBerry database notification system installs automatically.

If you create the BlackBerry Configuration Database on a database server that you installed on a computer that is not the computer that hosts the BlackBerry Enterprise Server, you can install the BlackBerry database notification system manually after you complete the BlackBerry Enterprise Server installation process.

Before you begin:

- You must have the system administrator permission for the database.

1. On the database server, open the BlackBerry Enterprise Server installation files.
2. Perform one of the following actions:
 - If a 32-bit Microsoft SQL Server is running in your organization's environment, in the **Tools\DBNS\x86** folder, copy the **RimEsp.dll** file to C:\Program Files\Microsoft SQL Server\MSSQL\Binn.
 - If a 64-bit Microsoft SQL Server is running in your organization's environment, in the **Tools\DBNS\x64** folder, copy the **RimEsp.dll** file to C:\Program Files(x86)\Microsoft SQL Server\MSSQL\Binn.
3. Open the Microsoft SQL Server Management Studio.
4. Using the Microsoft SQL Server Management Studio, navigate to Database\DBInstallScripts\SQLServer\5.0 in the BlackBerry Enterprise Server installation files.
5. Open the **NotifyMasterInstall.sql** file.
6. Run the script.
7. Open the **NotifyInstall.sql** file.
8. Change `<_DATABASENAME_>` to the name of the BlackBerry Configuration Database (for example, BesMgmt).
9. Run the script.
10. Confirm that the Microsoft SQL Server Management Studio displays the Function `dbo.xp_RIMxxxx` registered message.
11. To add additional BlackBerry Configuration Database instances in your organization's environment, repeat steps 7 to 10.

Best practice: Running the BlackBerry Enterprise Server

Best practice	Description
Do not change the startup type for the BlackBerry Enterprise Server services.	<p>When you install or upgrade the BlackBerry Enterprise Server, the setup application configures the startup type for the BlackBerry Enterprise Server services to automatic or manual. For example, the setup application configures the startup type for the BlackBerry Mail Store Service, BlackBerry Policy Service, and BlackBerry Synchronization Service to manual.</p> <p>To avoid errors in the BlackBerry Enterprise Server, do not change the startup type for the BlackBerry Enterprise Server services.</p>
Do not change the account information for BlackBerry Enterprise Server services.	When you install or upgrade the BlackBerry Enterprise Server, the setup application configures the account information for the BlackBerry Enterprise Server services.

Best practice	Description
	Do not change the account information for the BlackBerry Enterprise Server unless the BlackBerry Enterprise Server documentation specifies that you can.
Run the BlackBerry Configuration Panel as an administrator.	<p>Consider the following guidelines if you are running the BlackBerry Configuration Panel on Windows Server 2008:</p> <ul style="list-style-type: none">• Log in to the computer with a user account that is in the Administrator group on the Windows Server.• Right-click the BlackBerry Configuration Panel icon and click Run as administrator.

Configuring support for Unicode languages

Configure support for Unicode languages

You can make sure that the messaging application can display the Unicode messages that the BlackBerry device sends by configuring the BlackBerry Enterprise Server to support Unicode languages (for example, Japanese, Korean, or Simplified Chinese).

1. On the computer that hosts the BlackBerry Enterprise Server, on the taskbar, click **Start > Run**.
2. Type **regedit**.
3. Click **OK**.
4. Perform one of the following actions:
 - If you are running a 32-bit version of Windows, go to HKEY_LOCAL_MACHINE\SOFTWARE\Research In Motion\BlackBerry Enterprise Server\Agents.
 - If you are running a 64-bit version of Windows, go to HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Research In Motion\BlackBerry Enterprise Server\Agents.
5. If the **MAPIEncoding** registry key exists, perform one of the following actions:
 - Delete the key.
 - Change the value of the key to **1**.
6. Perform one of the following actions:
 - If you are running a 32-bit version of Windows, go to HKEY_LOCAL_MACHINE\SOFTWARE\Research In Motion\BlackBerry Enterprise Server\Setup.

- If you are running a 64-bit version of Windows, go to HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Research In Motion\BlackBerry Enterprise Server\Setup.
7. Verify that the **ConfigKeystoreCountry** registry key is set to one of the following values, depending on your organization's environment:
 - CN for Simplified Chinese
 - JP for Japanese
 - KR for Korean
 8. In the Windows Services, restart the BlackBerry Dispatcher.

Change the character encoding that the BlackBerry Enterprise Server uses to send Unicode messages

By default, when the BlackBerry Enterprise Server receives Unicode messages from BlackBerry devices, it uses UTF-8 character encoding to process the Unicode messages. If email applications cannot correctly display Unicode messages that devices send (for example, if email applications cannot display attachment file names or contact lists correctly), you can configure the BlackBerry Enterprise Server to select another character encoding to use to process Unicode messages.

Before you begin: Configure support for Unicode languages.

1. On the computer that hosts the BlackBerry Enterprise Server, on the taskbar, click **Start > Run**.
2. Type **regedit**.
3. Click **OK**.
4. Perform one of the following actions:
 - If you are running a 32-bit version of Windows, go to HKEY_LOCAL_MACHINE\SOFTWARE\Research In Motion\BlackBerry Enterprise Server\Agents.
 - If you are running a 64-bit version of Windows, go to HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Research In Motion\BlackBerry Enterprise Server\Agents.
5. Create a DWORD value that is named **AutoSelectOutgoingEncoding**.
6. Double-click the new DWORD value.
7. In the **Value data** field, perform one of the following actions:
 - To configure the BlackBerry Enterprise Server to select the most appropriate character encoding when it encodes plain-text messages, type **1**. If the BlackBerry Enterprise Server cannot identify which character encoding to use, the BlackBerry Enterprise Server encodes plain-text messages in UTF-8.
 - To configure the BlackBerry Enterprise Server to select the most appropriate character encoding when it encodes email messages that use RTF or HTML, type **2**. If the BlackBerry Enterprise Server cannot identify which character encoding to use, the BlackBerry Enterprise Server encodes email messages that use RTF or HTML in UTF-8.

- To configure the BlackBerry Enterprise Server to select the most appropriate character encoding when it encodes plain-text messages and email messages that use RTF or HTML, type **3**. If the BlackBerry Enterprise Server cannot identify which character encoding to use, the BlackBerry Enterprise Server encodes all email messages in UTF-8.
8. In the Windows Services, restart the BlackBerry Dispatcher.

Configure the BlackBerry Enterprise Server to use only UTF-8 to send Unicode messages

To make sure that the BlackBerry Enterprise Server uses only UTF-8 character encoding to process Unicode messages that it receives from BlackBerry devices, complete the following steps.

1. On the computer that hosts the BlackBerry Enterprise Server, on the taskbar, click **Start > Run**.
2. Type **regedit**.
3. Click **OK**.
4. Perform one of the following actions:
 - If you are running a 32-bit version of Windows, go to HKEY_LOCAL_MACHINE\SOFTWARE\Research In Motion\BlackBerry Enterprise Server\Agents.
 - If you are running a 64-bit version of Windows, go to HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Research In Motion\BlackBerry Enterprise Server\Agents.
5. Create a DWORD value that is named **MAPIEncoding**.
6. In the **Value data** field, type **0** and click **OK**.
7. Create a DWORD value that is named **AutoSelectOutgoingEncoding**.
8. In the **Value data** field, type **0** and click **OK**.
9. In the Windows Services, restart the BlackBerry Dispatcher.

Configure support for Unicode text in calendars on BlackBerry devices in a Microsoft Exchange environment

Before you begin: In a Microsoft Exchange 2003 environment, install the following hotfixes for wireless calendar synchronization:

- Visit <http://support.microsoft.com/kb/913643> to download and install the required hotfix on the messaging server.

- Visit <http://support.microsoft.com/kb/923537/en-us> to download and install the required hotfix on the computer that will host the BlackBerry Enterprise Server.

You must complete this task for all Microsoft Exchange versions to ensure calendar items use the correct Unicode characters in fields such as subject, location, or notes.

1. On the BlackBerry Enterprise Server, on the **Start** menu, click **Run**.
2. Type **regedit**.
3. Click **OK**.
4. Perform one of the following actions:
 - If you are running a 32-bit version of Windows, navigate to HKEY_LOCAL_MACHINE\Software\Research In Motion\BlackBerry Enterprise Server\Agents.
 - If you are running a 64-bit version of Windows, navigate to HKEY_LOCAL_MACHINE\Software\WOW6432Node\Research In Motion\BlackBerry Enterprise Server\Agents.
5. Create a DWORD value that is named **SetLocaleIDs**.
6. Set the value to **1**.
7. In the Windows Services, restart the BlackBerry Messaging Agent.

Configuring the BlackBerry Enterprise Server to use Microsoft Exchange Web Services

By default, the BlackBerry Enterprise Server uses Microsoft Exchange Web Services to manage calendars on BlackBerry devices. The BlackBerry Enterprise Server monitors periodically whether a user account can use Microsoft Exchange Web Services. If a user account cannot use Microsoft Exchange Web Services, for example, because of a configuration error in Microsoft Exchange, the BlackBerry Enterprise Server uses MAPI and CDO libraries to manage calendars on devices. A BlackBerry Messaging Agent on the BlackBerry Enterprise Server can include a dynamic mix of user accounts that use Microsoft Exchange Web Services and user accounts that use MAPI and CDO libraries.

You can use the BlackBerry Enterprise Trait Tool to configure the BlackBerry Enterprise Server to use only Microsoft Exchange Web Services or only MAPI and CDO libraries to manage calendars on devices. You can configure a specific BlackBerry Messaging Agent instance, a specific BlackBerry Enterprise Server instance, or all BlackBerry Enterprise Server instances that share one BlackBerry Configuration Database.

To use Microsoft Exchange Web Services, your organization's environment must include Microsoft Exchange 2007 SP1 or later.

For more information about Microsoft Exchange Web Services, visit <http://msdn.microsoft.com/en-us/library/bb204119.aspx>.

For more information about configuring the BlackBerry Enterprise Server to use Microsoft Exchange Web Services, see the *BlackBerry Enterprise Server Administration Guide*.

Prerequisites: Configuring the BlackBerry Enterprise Server to use Microsoft Exchange Web Services

- Install an SSL certificate on a BlackBerry Enterprise Server so that the BlackBerry Enterprise Server can communicate with Microsoft Exchange Web Services. You must export the SSL certificate from the client access server for Microsoft Exchange and import the SSL certificate to the BlackBerry Enterprise Server. The BlackBerry Enterprise Server supports a self-signed security certificate or a certificate that a certificate authority issues. For more information about installing an SSL certificate, visit support.microsoft.com to read article KB 962624.
- Configure Microsoft Exchange Impersonation for a BlackBerry Enterprise Server administrator account. For more information about configuring Microsoft Exchange Impersonation, visit msdn.microsoft.com/en-us/library/bb204095.aspx and select the appropriate tab for Microsoft Exchange 2007 or Microsoft Exchange 2010.
- Assign IIS permissions to a BlackBerry Enterprise Server administrator account on the Microsoft Exchange Server that hosts the client access server role. For more information about assigning IIS permissions, visit support.microsoft.com to read article KB 816117.

Configure the BlackBerry Enterprise Server to use Microsoft Exchange Web Services

You can configure the BlackBerry Enterprise Server to use only Microsoft Exchange Web Services to manage calendars on BlackBerry devices.

1. Copy the BlackBerry Enterprise Server installation files to the computer that hosts the primary BlackBerry Enterprise Server.
2. Extract the contents to a folder on the computer.
3. At a command prompt, navigate to `<extracted_folder>\tools`.
4. Perform one of the following actions:
 - To configure a specific BlackBerry Messaging Agent on a specific BlackBerry Enterprise Server to use Microsoft Exchange Web Services, type **traittool -server <server_name> -agent <agent_id> -trait EWSEnable -set true**, where `<server_name>` is the name of the BlackBerry Enterprise Server and `<agent_id>` is the ID for the BlackBerry Messaging Agent. If you configured high availability, configure only the primary BlackBerry Enterprise Server.

- To configure all BlackBerry Messaging Agent instances on a specific BlackBerry Enterprise Server to use Microsoft Exchange Web Services, type **traittool -server <server_name> -trait EWSEnable -set true**, where <server_name> is the name of the BlackBerry Enterprise Server. If you configured high availability, configure only the primary BlackBerry Enterprise Server.
 - To configure all BlackBerry Messaging Agent instances on all BlackBerry Enterprise Server instances to use Microsoft Exchange Web Services, type **traittool -global -trait EWSEnable -set true**.
5. Restart the BlackBerry Messaging Agent instances that you made changes to.

After you finish:

In the logs folder verify that the file named <server_name>_CALH_<agent_id>_<date>.txt appears. In the file name, <server_name> is the name of the BlackBerry Enterprise Server, <agent_id> is the ID of the BlackBerry Messaging Agent, and <date> is the date that you configured the BlackBerry Enterprise Server to use Microsoft Exchange Web Services.

Manage the BlackBerry Enterprise Server performance in a Microsoft Exchange 2010 environment

Before you begin:

You must install version 6.5.8211.0 of the Microsoft Exchange Server MAPI Client and CDO 1.2.1 on the BlackBerry Enterprise Server computer. For more information, visit www.microsoft.com/downloads to read the article named "Microsoft Exchange Server MAPI Client and Collaboration Data Objects 1.2.1".

1. Verify that you configured Microsoft Exchange 2010 performance as suggested by Microsoft. For more information, visit technet.microsoft.com to read "Understanding the Mailbox Database Cache" in the Microsoft Exchange 2010 SP1 help.
2. If necessary for your organization's environment, verify that you installed the Microsoft hotfixes that are located in the following articles:
 - 2155311
 - 979149

For more information about the hotfixes, visit support.microsoft.com.

3. Configure the BlackBerry Enterprise Server to use Microsoft Exchange Web Services to manage calendars on devices. For more information, see "Configuring the BlackBerry Enterprise Server to use Microsoft Exchange Web Services or MAPI and CDO libraries" in the *BlackBerry Enterprise Server Administration Guide*. BlackBerry Enterprise Server defaults to using LDAP to retrieve email addresses and organizer data upon installation.

Configure a Hosted BlackBerry services environment for use with Microsoft Exchange 2010 SP1 Multi-Tenant Deployment

1. Verify that you configured the Microsoft Exchange 2010 messaging environment and completed the tasks "Configure a management role for Microsoft Exchange Web Services" and "Configure the BlackBerry Enterprise Server to run without public folders". For more information, see "Configuring a Microsoft Exchange 2010 messaging environment".
2. Configure Hosted BlackBerry services. If possible, make sure that your organization's customers have full control of their subtree in Microsoft Active Directory. For more information, see "Configure Hosted BlackBerry services when your organization's customers have full control of their subtree in Microsoft Active Directory" in the *BlackBerry Enterprise Server Administration Guide*.

Configure the BlackBerry Administration Service instances in a pool to communicate across network subnets

The instances in the BlackBerry Administration Service pool use multicast UDP to communicate with each other. If the BlackBerry Administration Service instances are located in different network subnets and your organization's network configuration does not permit multicast UDP across the network subnets, you must configure the BlackBerry Administration Service instances to use TCP to communicate with each other. For example, if your organization uses a UDP peer-to-peer firewall filter, you must configure the BlackBerry Administration Service instances to use TCP to communicate across the network subnets.

1. Make sure that no BlackBerry Administration Service instance is in the process of restarting.
2. In the BlackBerry Administration Service, on the **Servers and components** menu, expand **BlackBerry Solution topology > BlackBerry Domain > Component view > BlackBerry Administration Service**.
3. Click **Edit component**.

4. In the **BlackBerry Administration Service pool** drop-down list, click **TCP with TCP PING**.
5. Click **Save all**.
6. Restart the BlackBerry Administration Service instances.

Log in to the BlackBerry Administration Service for the first time

To open the BlackBerry Administration Service, you can use a browser on any computer that has access to the computer that hosts the BlackBerry Administration Service.

Before you begin: To manage a BlackBerry device using the BlackBerry Administration Service while the BlackBerry device is connected to the computer, the browser must permit Microsoft ActiveX controls.

1. In the browser, type **https://<server_name>/webconsole/app**, where <server_name> is the name of the computer that hosts the BlackBerry Administration Service.
2. In the **User name** field, type **admin**.
3. In the **Password** field, type the password that you created during the installation process.
4. In the **Log in using** drop-down list, click **BlackBerry Administration Service** or **Active Directory Authentication**.
5. Click **Log in**.

There is a problem with this website's security certificate

Description

The browser displays this error message when you try to navigate to the BlackBerry Administration Service using Windows Internet Explorer version 7 or later.

Possible solution

Add the web address for the BlackBerry Administration Service to the list of trusted web sites in Windows Internet Explorer, and install the certificate for the BlackBerry Administration Service in the certificate store of your computer.

1. In Windows Internet Explorer, navigate to the BlackBerry Administration Service console.
2. Click **Continue to this website (not recommended)**.
3. On the **Tools** menu, click **Internet Options**.

4. On the **Security** tab, click **Local Intranet**.
5. Click **Sites**.
6. Click **Add** to add the console to the list of trusted web sites.
7. Click **Close**.
8. Click **OK**.
9. In the browser window, on the toolbar, click **Certificate Error**.
10. Click **View certificates**.
11. Click **Install certificate**. The Certificate Import Wizard opens.
12. Complete the instructions in the Certificate Import Wizard. If you are trying to log in to the BlackBerry Administration Service using a computer that runs Windows Vista, perform the following actions in the Certificate Import Wizard.
 - a In the Certificate Store dialog box, click **Place all certificates in the following store**.
 - b Click **Browse**.
 - c Click **Trusted Root Certification Authorities**.
 - d Click **OK**.
13. Close and reopen the browser.

Configuring communication with distributed components

Connecting to a BlackBerry Attachment Service

Perform the following actions if you installed the BlackBerry Attachment Service on a computer that is separate from the computer that host the BlackBerry Enterprise Server or BlackBerry Enterprise Server components that connect to the BlackBerry Attachment Service. These actions ensure that BlackBerry Enterprise Server components can connect to the BlackBerry Attachment Service.

Connect a BlackBerry MDS Connection Service to a remote BlackBerry Attachment Service

Perform the following task if you did not install the BlackBerry Attachment Service on the same computer as the BlackBerry MDS Connection Service.

1. In the BlackBerry Administration Service, on the **Servers and components** menu, expand **BlackBerry Solution topology > BlackBerry Domain > Component view > Attachment > Connector**.
2. Click the BlackBerry Attachment Connector that is installed with the BlackBerry MDS Connection Service.
3. Click **Edit instance**.
4. On the **Supported Attachment Server instances** tab, in the **Name** drop-down list, select the BlackBerry Attachment Service instance that you want to connect the BlackBerry MDS Connection Service to.
5. In the **Results query period(s)** field, type the number of seconds that you want the BlackBerry MDS Connection Service to wait for a response before it sends a request to another BlackBerry Attachment Service instance.
6. In the **Dedicated server** drop-down list, click **yes** if you want the BlackBerry Attachment Service instance to process specific content types only for the BlackBerry MDS Connection Service.
7. In the **Pool** drop-down list, perform one of the following actions:
 - To include the BlackBerry Attachment Service instance in the primary group of instances in a pool, select **Primary**. You must include at least one BlackBerry Attachment Service instance in the primary group. If you are not configuring high availability, select **Primary**.
 - To include the BlackBerry Attachment Service instance in the secondary group, select **Secondary**.
8. Perform the following actions:
 - To turn on support for an attachment file format, in the **Extensions** section, type the file extension of the format. Click the **Add** icon beside the extension that you typed.
 - To turn off support for an attachment file format, in the **Extensions** section, click the **Delete** icon beside the file extension.
9. Click the **Add** icon.
10. Click **Save All**.
11. Repeat steps 2 to 10 for each BlackBerry MDS Connection Service instance in your organization's environment that requires the BlackBerry Attachment Service instance.

Connect the BlackBerry Collaboration Service to a remote BlackBerry Attachment Service

Using the BlackBerry Client for IBM Sametime, users can send files to contacts in their contact lists. To optimize files for viewing on BlackBerry devices, the BlackBerry Collaboration Service must connect to a BlackBerry Attachment Service instance. If you did not install the BlackBerry Attachment Service instance on the same computer as the BlackBerry Collaboration Service, you must connect the BlackBerry Collaboration Service to a remote BlackBerry Attachment Service.

1. On the computer that hosts the BlackBerry Collaboration Service, navigate to C:\Program Files\Research In Motion\BlackBerry Enterprise Server\BBIM\Servers*<server_name>*\config.
2. In a text editor, open the **rimpublic.property** file.
3. At the end of the file, type the following text on separate lines:
Attachment.Server.host=<attachment_server_host_name>

Attachment.Server.port.asp=1900

Attachment.Server.port.rqp=2000

- To connect another BlackBerry Collaboration Service to the BlackBerry Attachment Service instance, type the text that appears in step 3 for this BlackBerry Collaboration Service instance.
- Save and close the file.
- In the Windows Services, restart the BlackBerry Collaboration Service.
- On the computer that hosts the BlackBerry Attachment Service, in the Registry Editor, navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Research In Motion\BBAttachServer\BBAttachBESExtension.
- On the computer that hosts the BlackBerry Attachment Service, in the Registry Editor, perform one of the following actions:
 - If you are running a 32-bit version of Windows, navigate to HKEY_LOCAL_MACHINE\Software\Research In Motion\BBAttachServer\BBAttachBESExtension.
 - If you are running a 64-bit version of Windows, navigate to HKEY_LOCAL_MACHINE\Software\WOW6432Node\Research In Motion\BBAttachServer\BBAttachBESExtension.
- Change **AllowRemoteServices** to **1**.
- In the Windows Services, restart the BlackBerry Attachment Service.

Connect a BlackBerry Enterprise Server to a remote BlackBerry Attachment Service

Perform the following actions if you did not install the BlackBerry Attachment Service on the same computer as the BlackBerry Enterprise Server. The BlackBerry Messaging Agent requires access to the remote BlackBerry Attachment Service so that it can process attachment requests.

- In the BlackBerry Administration Service, on the **Servers and components** menu, expand **BlackBerry Solution topology > BlackBerry Domain > Component view > Attachment > Connector**.
- Click the BlackBerry Attachment Connector that is installed with the BlackBerry Enterprise Server.
- Click **Edit instance**.
- On the **Supported Attachment Server instances** tab, in the **Name** drop-down list, select the BlackBerry Attachment Service instance that you want to connect to the BlackBerry Enterprise Server.
- In the **Results query period(s)** field, type the number of seconds that you want the BlackBerry Enterprise Server to wait for a response before it sends a request to another BlackBerry Attachment Service instance.
- In the **Dedicated server** drop-down list, click **yes** if you want the BlackBerry Attachment Service instance to process specific content types only for the BlackBerry Enterprise Server.
- In the **Pool** drop-down list, perform one of the following actions:
 - To include the BlackBerry Attachment Service instance in the primary group of instances in a pool, select **Primary**. You must include at least one BlackBerry Attachment Service instance in the primary group. If you are not configuring BlackBerry Attachment Service high availability, select **Primary**.

- To include the BlackBerry Attachment Service instance in the secondary group, select **Secondary**.
8. Perform the following actions:
 - To turn on support for an attachment file format, in the **Extensions** section, type the file extension of the format. Click the **Add** icon beside the extension that you typed.
 - To turn off support for an attachment file format, in the **Extensions** section, click the **Delete** icon beside the file extension.
 9. Click the **Add** icon.
 10. Click **Save All**.
 11. Repeat steps 2 to 10 for each BlackBerry Enterprise Server instance in your organization's environment that requires the BlackBerry Attachment Service instance.
 12. Restart the BlackBerry Enterprise Server.
 - a. In the **Component view**, expand **BlackBerry Enterprise Server**.
 - b. Click the BlackBerry Enterprise Server instance.
 - c. Click **Restart instance**.

Connect a remote BlackBerry Attachment Service to a BlackBerry Enterprise Server

Perform the following actions if you did not install the BlackBerry Attachment Service on the same computer as the BlackBerry Enterprise Server. The BlackBerry Messaging Agent requires access to the remote BlackBerry Attachment Service so that it can process attachment requests.

1. In the BlackBerry Administration Service, on the **Servers and components** menu, expand **BlackBerry Solution topology > BlackBerry Domain > Component view > Attachment > Server**.
2. Click the name of the remote BlackBerry Attachment Service.
3. Click **Edit instance**.
4. On the **Supported Attachment Connector instances** tab, add the BlackBerry Attachment Connector that is installed with the BlackBerry Enterprise Server.
5. Click **Save All**.
6. To restart the BlackBerry Attachment Service, on the **Instance information** tab, in the **Status** list, click **Restart instance**.

Connecting to a BlackBerry Router

Perform the following tasks if you installed the BlackBerry Router on a computer that is separate from the computer that hosts the BlackBerry Enterprise Server. These tasks ensure that the BlackBerry Enterprise Server can connect to the BlackBerry Router.

Permit a BlackBerry Enterprise Server to connect to a remote BlackBerry Router

If you installed a BlackBerry Router on a computer that is separate from the computer that hosts a BlackBerry Enterprise Server, you must permit the BlackBerry Dispatcher that you installed with the BlackBerry Enterprise Server to connect to the BlackBerry Router. The BlackBerry Router that you installed on a separate computer can send data packets from the BlackBerry Enterprise Server to BlackBerry devices.

1. On the computer that hosts the BlackBerry Router, click **Start > Run**.
2. Type **regedit**.
3. Click **OK**.
4. Perform one of the following actions:
 - If you are running a 32-bit version of Windows, navigate to \\HKEY_LOCAL_MACHINE\SOFTWARE\Research In Motion\BlackBerryRouter.
 - If you are running a 64-bit version of Windows, navigate to \\HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Research In Motion\BlackBerryRouter.
5. Verify the value of **AllowRemoteServices** is **1**.
6. If you want to change the port number that the BlackBerry Router uses to open connections to the BlackBerry Dispatcher, change the value of **ServicePort** to the port number that the BlackBerry Router should use, for example, port number 80. By default, the port number is 3101.
7. In the Windows Services, restart the BlackBerry Router service.

Connect a BlackBerry Enterprise Server to a remote BlackBerry Router

1. In the BlackBerry Administration Service, on the **Servers and components** menu, expand **BlackBerry Solution topology > BlackBerry Domain > Component view > BlackBerry Enterprise Server**.
2. Click the BlackBerry Enterprise Server instance or BlackBerry Enterprise Server pair that you want to assign the BlackBerry Router to.
3. Click **Edit instance**.
4. In the **Router address** section, type the FQDN of the computer that hosts the BlackBerry Router.
5. If the BlackBerry Router uses a port number other than port number 3101, in the **Port override** field, type the port number.
6. Click the **Add** icon.
7. Click **Save All**.
8. Restart the BlackBerry Enterprise Server using one of the following methods:
 - If you changed a BlackBerry Enterprise Server instance, on the **Instance** tab, click **Restart instance**.

- If you changed a BlackBerry Enterprise Server pair, click one of the instances and on the **Instance** tab, click **Restart instance**. Repeat this step for the other instance.
- In the Windows Services, restart the BlackBerry Dispatcher.

Configuring a computer for monitoring

Configure the SNMP service for monitoring by a monitoring application

You can configure the SNMP service on the computer that hosts the BlackBerry Enterprise Server so that the a monitoring application can monitor BlackBerry Enterprise Server activity.

Before you begin: Verify that the SNMP service is installed and running.

1. On a computer that hosts the BlackBerry Enterprise Server or BlackBerry Enterprise Server components, in the Windows Services, right-click **SNMP Service**. Click **Properties**.
2. On the **General** tab, change the startup type to **Automatic**.
3. On the **Traps** tab, in the **Community name** field, type the community name for the SNMP service. The field is case-sensitive.
4. In the **Trap Destinations** section, add the IP address of the computer that hosts the monitoring application.
5. On the **Security** tab, in the **Accepted community names** section, add the community name that you typed in step 3. The SNMP community name is read-only.
6. Select the **Accept SNMP packets from any host** or **Accept SNMP packets from these hosts** option, depending on your organization's environment.
7. If you selected **Accept SNMP packets from these hosts**, type the IP address of the computer that hosts the monitoring application.
8. Click **Apply**.
9. In the **Services** list, right-click **SNMP Service**. Click **Restart**.

Restrict database permissions for the BlackBerry Attachment Service

The BlackBerry Attachment Service accesses the BlackBerry Configuration Database to read attachment data using a Windows account or a SQL authentication account. To limit the access that the BlackBerry Attachment Service account has to the tables in the BlackBerry Configuration Database, you can configure a BlackBerry Attachment Service account that has limited database permissions. This account is not the same as the account that the BlackBerry Enterprise Server uses to access the BlackBerry Configuration Database.

Before you begin:

- Create a Windows account for the BlackBerry Attachment Service.
 - To use database authentication, create a SQL authentication account for the BlackBerry Attachment Service.
1. In the Microsoft SQL Server management console, create a SQL login for the Windows account or SQL authentication account.
 2. Assign the account to the `rim_db_AttachmentServer` role in the BlackBerry Configuration Database.
 3. If you want the BlackBerry Attachment Service to use a SQL authentication account to access the BlackBerry Configuration Database, perform the following actions:
 - a. On the computer that you installed the BlackBerry Attachment Service on, log in using the Windows account that the BlackBerry Attachment Service is running on.
 - b. Click **Start > Run**.
 - c. Type **regedit**. Click **OK**.
 - d. If you are running a 32-bit version of Windows, navigate to `HKEY_CURRENT_USER\SOFTWARE\Research In Motion`.
 - e. If you are running a 64-bit version of Windows, navigate to `HKEY_CURRENT_USER\SOFTWARE\WOW6432Node\Research In Motion`.
 - f. Create the `BBAAttachServer\Database` keys.
 - g. In the Database key, create the **Login** and **Password** string values for the SQL authentication account.

After you finish: After you complete the BlackBerry Attachment Service installation process, in the Windows Services, verify that the service for the BlackBerry Attachment Service is using the Windows account that you configured. If you need to change the account information, restart the BlackBerry Attachment Service.

Configuring minimum Microsoft SQL Server permissions for the Windows account

The BlackBerry Enterprise Server setup application requires the Windows account that it uses during the installation process or upgrade process to have Microsoft SQL Server permissions to create or upgrade the BlackBerry Configuration Database. The setup application requires the Windows account to have more Microsoft SQL Server permissions to install the BlackBerry Enterprise Server than the BlackBerry Enterprise Server requires to run.

After the installation or upgrade process completes, you can change the Microsoft SQL Server permissions of the Windows account to the Microsoft SQL Server permissions that the BlackBerry Enterprise Server requires to run. When you change the Microsoft SQL Server permissions of the Windows account, you can use Microsoft SQL Server security to minimize the operations that the Windows account can perform on the BlackBerry Configuration Database.

The following table describes the Microsoft SQL Server permissions for the setup application and the Windows account that the BlackBerry Enterprise Server uses to run.

Server and database roles	Description
db_owner	The setup application requires this role to upgrade the BlackBerry Configuration Database. This role is the default permission in Microsoft SQL Server for running the BlackBerry Enterprise Server.
rim_db_bes_server	The setup application or the createDB executable creates the role automatically when it creates the BlackBerry Configuration Database. This role is the minimum permission in Microsoft SQL Server for running the BlackBerry Enterprise Server.

Configure minimum Microsoft SQL Server permissions for the Windows account

You can configure the minimum Microsoft SQL Server permissions for the Windows account that the BlackBerry Enterprise Server uses to run.

1. Open the Microsoft SQL Server console.
2. Expand **Microsoft SQL Server > Security > Logins**.
3. Right-click the Windows account that the BlackBerry Enterprise Server uses to run. Click **Properties**.
4. Map the Windows account to the BlackBerry Configuration Database.

5. Change the **Database role membership** to **rim_db_bes_server**.
6. Remove all other database role memberships.
7. Apply your changes.

Changing the BlackBerry Configuration Database

If you want a BlackBerry Enterprise Server to use a different BlackBerry Configuration Database, you must run the setup application and specify the BlackBerry Configuration Database that you want the BlackBerry Enterprise Server to use.

When you change the BlackBerry Configuration Database, the BlackBerry Enterprise Server becomes unavailable and users cannot send or receive messages on their BlackBerry devices. Organizer data synchronization occurs after you have changed the BlackBerry Configuration Database.

Provisioning the BlackBerry Collaboration Service as a trusted application

If you install Microsoft Office Communications Server 2007 R2 or Microsoft Lync Server 2010 for instant messaging, you must provision the BlackBerry Collaboration Service as a trusted application in Microsoft Active Directory.

If you add the Windows account that runs the BlackBerry Collaboration Service to the RTCUniversalServerAdmins group, the BlackBerry Collaboration Service is automatically provisioned as a trusted application. The RTCUniversalServerAdmins group is created when you install Microsoft Office Communications Server 2007 R2 or Microsoft Lync Server 2010.

If you do not add the Windows account that runs the BlackBerry Collaboration Service to the RTCUniversalServerAdmins group, you must manually provision each BlackBerry Collaboration Service instance as a trusted application. If you change the listening port number or if the FQDN of the instant-messaging pool changes, you need to repeat the manual provisioning task. If you restart the BlackBerry Collaboration Service, you do not need to repeat the manual provisioning task.

Manually provision the BlackBerry Collaboration Service as a trusted application

Before you begin:

- Make sure that the Windows account that you use to complete this task is a member of the RTCUniversalServerAdmins group or a group with similar permissions.
 - Turn off automatic configuration of the BlackBerry Collaboration Service as a trusted application.
1. On the computer that hosts the BlackBerry Collaboration Service or on any computer that is in the BlackBerry Enterprise Server domain, navigate to C:\Program Files (x86)\Research In Motion\BlackBerry Enterprise Server\BBIM\bin.
 2. Run the **BCSProvisioner.exe** file.
 3. In the **BCSProvisioner** dialog box, perform the following actions to complete the provisioning process:
 - a. In the **Office Communications Server Pool** drop-down box, select the FQDN that you specified during the BlackBerry Enterprise Server installation.
 - b. In the **BlackBerry Collaboration Service server FQDN** field, type the FQDN of the computer that hosts the BlackBerry Collaboration Service.
 - c. In the **Listening port** field, type the port number that you specified during the BlackBerry Enterprise Server installation. The default port number is 65061.
 - d. Click **Provision BCS**.
 4. In the Windows Services, restart the BlackBerry Collaboration Service.

Turn off automatic provisioning of the BlackBerry Collaboration Service as a trusted application

If you install Microsoft Office Communications Server 2007 R2 or Microsoft Lync Server 2010 for instant messaging and you want to manually provision the BlackBerry Collaboration Service as a trusted application in Microsoft Active Directory, you must first turn off automatic provisioning.

Before you begin: Make sure that the Windows account that runs the BlackBerry Collaboration Service is a member of either the RTComponentUniversalServices group or the RTCUniversalServerAdmins group.

1. On the computer that hosts the BlackBerry Collaboration Service, navigate to <drive>:\Program Files (x86)\Research In Motion\BlackBerry Enterprise Server\BBIM\Servers\instance\config\.
2. In a text editor, open the **rimpublic.property** file.
3. At the end of the file, type **improxy.RIMMSConnector.autoprovision=false**.
4. Save and close the **rimpublic.property** file.
5. In the Windows Services, restart the BlackBerry Collaboration Service.

Adding or removing BlackBerry Enterprise Server components

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If you installed a BlackBerry Enterprise Server previously, you can add one or more BlackBerry Enterprise Server components to the existing BlackBerry Enterprise Server, or you can remove existing BlackBerry Enterprise Server components from the BlackBerry Enterprise Server.

To add or remove a BlackBerry Enterprise Server component, you must run the setup application again. The setup application removes the existing BlackBerry Enterprise Server software from the computer, and installs only the BlackBerry Enterprise Server components that you select. You can also choose to install either a BlackBerry Enterprise Server or install one or more remote components.

If you installed a BlackBerry Enterprise Server and, when you run the setup application again you select the remote component setup option, the setup application removes the existing BlackBerry Enterprise Server software. If you installed one or more remote components and you select the BlackBerry Enterprise Server setup option, the setup application removes the existing remote components.

You can add or remove the following BlackBerry Enterprise Server components.

Component	Options
BlackBerry Enterprise Server	<p>You can choose one of the following options:</p> <ul style="list-style-type: none">• You can remove a BlackBerry Enterprise Server (which includes a BlackBerry Attachment Service, BlackBerry Dispatcher, BlackBerry MDS Connection Service, BlackBerry Messaging Agent, BlackBerry Policy Service, BlackBerry Router, and BlackBerry Synchronization Service) and install one or more remote components instead.• You can remove any remote components and install a BlackBerry Enterprise Server instead.
BlackBerry Administration Service	<p>You can choose one of the following options:</p> <ul style="list-style-type: none">• If you installed a BlackBerry Administration Service with a BlackBerry Enterprise Server, you can remove the BlackBerry Administration Service.• If you installed a BlackBerry Enterprise Server, you can add a BlackBerry Administration Service.• If you installed a BlackBerry Administration Service as a remote component, you can remove it.

Component	Options
BlackBerry Attachment Service	<ul style="list-style-type: none">• If you installed remote components, you can add a BlackBerry Administration Service. <p>You can choose one of the following options:</p> <ul style="list-style-type: none">• If you installed a BlackBerry Attachment Service as a remote component, you can remove it.• You can add a BlackBerry Attachment Service to an existing installation of another remote component.
BlackBerry Collaboration Service	<p>You can choose one of the following options:</p> <ul style="list-style-type: none">• If you installed a BlackBerry Collaboration Service with a BlackBerry Enterprise Server, you can remove the BlackBerry Collaboration Service.• If you installed a BlackBerry Enterprise Server, you can add a BlackBerry Collaboration Service.• If you installed a BlackBerry Collaboration Service as a remote component, you can remove it.• If you installed remote components, you can add a BlackBerry Collaboration Service.
BlackBerry MDS Connection Service	<p>You can choose one of the following options:</p> <ul style="list-style-type: none">• If you installed a BlackBerry MDS Connection Service as a remote component, you can remove it.• You can add a BlackBerry MDS Connection Service to an existing installation of another remote component.
BlackBerry Router	<p>You can choose one of the following options:</p> <ul style="list-style-type: none">• If you installed a BlackBerry Router as a remote component, you can remove it.• You can add a BlackBerry Router to an existing installation of another remote component.

Add or remove a BlackBerry Enterprise Server component

When you add or remove a BlackBerry Enterprise Server component, the components on the computer that you perform this task on are unavailable for use until the installation or removal process is complete and you restart the BlackBerry Enterprise Server services.

The process includes a restart of the BlackBerry Enterprise Server.

Before you begin:

- If you configured high availability and you want to add or remove a BlackBerry Enterprise Server component from a computer that hosts a primary BlackBerry Enterprise Server instance, perform a manual failover to the standby BlackBerry Enterprise Server so that users are not affected by the adding or removing of a BlackBerry Enterprise Server component.
- If you configured database mirroring for the BlackBerry Configuration Database, you must verify that the BlackBerry Enterprise Server is connected to the principal database before you run the setup application.
- If you want to remove a BlackBerry Router, BlackBerry Attachment Service, BlackBerry MDS Connection Service, or BlackBerry Collaboration Service, use the BlackBerry Administration Service to remove the component from the list of component instances that the BlackBerry Enterprise Server instances use.

1. Log in to a computer using the Windows account that you used to install the BlackBerry Enterprise Server components.
2. Stop the BlackBerry Enterprise Server services.
3. In the BlackBerry Enterprise Server installation files, double-click **setup.exe**. If your operating system is Windows Server 2008, run **setup.exe** as an administrator.
4. In the **Setup type** dialog box, select **Use an existing BlackBerry Configuration Database**.
5. In the **Database information** dialog box, perform the following actions:
 - Verify the names of the database server and BlackBerry Configuration Database that the BlackBerry Enterprise Server instances use.
 - If you configured the database server to use static ports, select the **Static** option. If the static port number is not 1433, in the **Port** field, type the port number.
6. If you want to configure database mirroring, in the **Database mirroring options** dialog box, you can select **Add support for database mirroring** and type the name of the database server that hosts the mirror database in the **Name of the mirror database server** field. The setup application does not create the BlackBerry Configuration Database on the mirror Microsoft SQL Server; it adds a registry key to the computer that includes the name of the mirror Microsoft SQL Server.

7. In the **Setup options** dialog box, select the components that you want to add and clear the checkboxes for the components that you want to remove. The setup application upgrades any components that you installed previously that you select and the components might be unavailable for users during the installation process.
8. In the **MAPI Settings** dialog box, click **OK**.
9. If the setup application prompts you to restart the computer, click **Yes**.
10. Log in to the computer using the same account that you used in step 1.
11. In the **Administration settings** dialog box, consider the following information:
 - In the **Pool name** field, type a valid FQDN or IP address. The setup application uses the FQDN or IP address to create the BlackBerry Administration Service web address.
 - You must type the password for the SSL certificate that the BlackBerry Administration Service uses for authentication with browsers.
12. In the **Microsoft Active Directory settings** dialog box, in the **User password** field, type the password for the Microsoft Active Directory account (for example, BESAdmin) that the BlackBerry Enterprise Server instance uses to authenticate with Microsoft Active Directory. If you want to specify a different username and Windows domain, you must make sure that the Windows domain belongs to the Microsoft Active Directory forest that the Microsoft Exchange organization belongs to.
13. In the **Advanced administration settings** dialog box, perform one of the following actions:
 - If you select **Use Windows authentication**, you can choose to use the Microsoft Active Directory account that you used in the previous step, or you can specify login information for a Microsoft Active Directory administrator.
 - If you select **Use BlackBerry Administration Service authentication**, type and confirm a password for the BlackBerry Administration Service administrator account. Consider using the minimum rules for password complexity when you create the password for the administrator account. The password should be at least 8 characters in length and contain at least one number, letter, and special character, and should not contain dictionary words.

You use the login information that you specify to log in to the BlackBerry Administration Service for the first time.
14. Start the services for the BlackBerry Enterprise Server instance.
15. In the **Console addresses** dialog box, copy the web addresses for the BlackBerry Enterprise Server components and paste them into a document for future reference. You can use the web addresses to log in to the BlackBerry Enterprise Server components.

After you finish:

- If you added a component, to view the component information in the BlackBerry Administration Service, perform one of the following actions:
 - Restart the BlackBerry Administration Service.
 - On every computer that hosts the BlackBerry Administration Service, in the BlackBerry Administration Service, in the **Servers and components** menu, expand **BlackBerry Solution topology > BlackBerry Domain**. Click **Component view** and then click **Refresh list of registered components**.
- If you removed a component other than the BlackBerry Router, to delete the component information from the BlackBerry Configuration Database, use the BlackBerry Administration Service.

- If you reinstalled the BlackBerry Administration Service, in , delete the cache content.

Remove BlackBerry Enterprise Server component information from the BlackBerry Configuration Database

If you remove the software for a BlackBerry Enterprise Server component from a computer, the software removal process does not delete the component information from the BlackBerry Configuration Database. You must delete the information manually using the BlackBerry Administration Service so that the BlackBerry Administration Service does not display the information for the component that you removed.

Before you begin: Remove the software for the BlackBerry Enterprise Server component from the computer.

1. In the BlackBerry Administration Service, on the **Servers and components** menu, expand **BlackBerry Solution topology > BlackBerry Domain**.
2. Click **Component view**.
3. Beside the component that you removed, which appears as **Uninstalled**, click the **Delete** icon.
4. Click **Yes - Delete the instance** and wait until you return to the main page.

Removing the BlackBerry Enterprise Server software

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Remove the BlackBerry Enterprise Server software

1. On the taskbar, click **Start > Settings > Control Panel > Add/Remove Programs**.
2. Click **BlackBerry Enterprise Server**.
3. Click **Remove**.
4. Click **Yes**.

After you finish: To remove third-party software that the setup application installed during the BlackBerry Enterprise Server installation process, you can remove the JRE software and Java Web Start software from the computer.

Delete registry keys

The BlackBerry Enterprise Server setup application might not remove all of the registry keys from the Windows registry when you remove the BlackBerry Enterprise Server software. You can remove the registry keys from the Windows registry manually after the process to remove the BlackBerry Enterprise Server software completes successfully.

1. On the computer that you removed the BlackBerry Enterprise Server software from, on the **Start** menu, click **Run**.
2. Type **regedit**.
3. Click **OK**.
4. Delete the remaining registry keys.

BlackBerry Enterprise Server registry keys

The setup application might not remove the following BlackBerry Enterprise Server registry keys from the Windows Registry when you remove the BlackBerry Enterprise Server software.

Key	Location
Research In Motion	HKEY_LOCAL_MACHINE\SOFTWARE (32-bit OS) HKEY_LOCAL_MACHINE\Wow6432Node\SOFTWARE (64-bit OS)
BBAttachServer and any keys that start with BAS, BB, or BlackBerry	HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services
BBAttachServer and any keys that start with BAS, BB, or BlackBerry	HKEY_LOCAL_MACHINE\System\ControlSet001\Services
BBAttachServer and any keys that start with BAS, BB, or BlackBerry	HKEY_LOCAL_MACHINE\System\ControlSet00n\Services
Research In Motion	HKEY_CURRENT_USER\Software
any keys that are named BlackBerryServer, or are named the name of the BlackBerry Enterprise Server in your organization	HKEY_CURRENT_USER\Software\Microsoft\Windows NT\CurrentVersion\Windows Messaging SubSystem\Profiles
Research In Motion	HKEY_USERS\DEFAULT\Software
BESManmmc.dll	HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\App Paths
any key where ProductName is BlackBerry Enterprise Server	HKEY_CLASSES_ROOT\Installer\Products

Removing the BlackBerry database notification system

You must remove the BlackBerry database notification system manually if you installed it manually. You can remove the BlackBerry database notification system from one BlackBerry Configuration Database instance or all BlackBerry Configuration Database instances.

Remove the BlackBerry database notification system from a BlackBerry Configuration Database

1. Open the Microsoft SQL Server Management Studio.
2. Using the console, navigate to Database\DBInstallScripts\SQLServer\5.0 in the BlackBerry Enterprise Server installation files.
3. Open the **NotifyUninstall.sql** file.
4. Delete all commands after **--- delete notification stored procedures** and **-- delete notification tables**.
5. Run the script.
6. Perform one of the following actions:
 - Restart Microsoft SQL Server.
 - In Windows Explorer, navigate to C:\Program Files\Microsoft SQL Server\MSSQL\Binn. Rename the **RimEsp.dll** file (for example, RimEspXXX.tmp).

Remove the BlackBerry database notification system from all BlackBerry Configuration Database instances

1. Open the Microsoft SQL Server Management Studio.
2. Using the console, navigate to Database\DBInstallScripts\SQLServer\5.0 in the BlackBerry Enterprise Server installation files.
3. Open the **NotifyUninstall.sql** file.
4. Run the script.

5. Using Windows Explorer, navigate to <drive>:\Program Files\Microsoft SQL Server\MSSQL\Binn.
6. Delete the **RimEsp.dll** file.

Troubleshooting the BlackBerry Enterprise Server installation process

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Failed to write License Key to the Database

This error message appears when you try to add the BlackBerry Client Access License key during the installation process.

Possible solution

After you restart the computer during the BlackBerry Enterprise Server installation process, you must log in using the same Windows account that you used to start the installation process.

1. Close the setup application.
2. Log out of the computer.
3. Log in to the computer.
4. Restart the setup application.

Previous version detected but no database available

This error message appears when you cannot start the setup application or the setup application stops responding.

Possible solution

Verify that the registry keys that identify the BlackBerry Configuration Database exist in the Windows registry.

1. On the computer that you want to install or upgrade the BlackBerry Enterprise Server on, on the **Start** menu, click **Run**.
2. Type **regedit**.

3. Click **OK**.
4. In the left pane, navigate to HKEY_LOCAL_MACHINE\Software\Research In Motion\BlackBerry Enterprise Server \Database.
5. If necessary, create case-sensitive strings that you name **DatabaseName** and **DatabaseServerMachineName**.
6. Specify the name of the BlackBerry Configuration Database as the value for **DatabaseName**.
7. Specify the FQDN name of the database server as the value for **DatabaseServerMachineName**.
8. Restart the setup application.

A third-party tool did not install and the BlackBerry Enterprise Server setup application closed

Possible solution

1. On the BlackBerry Enterprise Server installation media, open the **Tools** folder.
2. Double-click the setup application file for the tool that you want to install.
3. Complete the instructions on the screen.
4. Restart the BlackBerry Enterprise Server setup application.

The setup application did not prompt you to change or confirm the MAPI profile

Possible solution

Create and change the MAPI profile manually.

1. On the BlackBerry Enterprise Server installation media, open the **Tools** folder.
2. Double-click the **Fixmapisvc.exe** file.
3. Verify that **mapisvc.inf** is installed in C:\winnt\system32\ or C:\windows\system32\.
4. On the taskbar, click **Start > All Programs > BlackBerry Enterprise Server > BlackBerry Server Configuration**.

5. On the **BlackBerry Server** tab, click **Edit MAPI profile**.
6. Type the Microsoft Exchange server name.
7. Click the Windows account that is associated with the MAPI profile.
8. Click **OK**.

You cannot determine the BlackBerry Attachment Connector that the BlackBerry Enterprise Server or the BlackBerry MDS Connection Service uses

If you install a BlackBerry Enterprise Server, the setup application also installs two BlackBerry Attachment Connector instances automatically. One of the BlackBerry Attachment Connector instances connects the BlackBerry Enterprise Server to the BlackBerry Attachment Service. The other instance connects the BlackBerry MDS Connection Service to the BlackBerry Attachment Service. During the installation process, the setup application gives both BlackBerry Attachment Connector instances a name that includes the computer name (for example, *<computer_name>_AC*).

The BlackBerry Administration Service displays the names of both the BlackBerry Attachment Connector instances. By default, you cannot determine easily which instance connects to the BlackBerry Enterprise Server or the BlackBerry MDS Connection Service, so you can change the display names of both the BlackBerry Attachment Connector instances to make them easier to identify.

1. In the BlackBerry Administration Service, on the **Servers and components** menu, expand **BlackBerry Solution topology > BlackBerry Domain > Component view > Attachment > Connector**.
2. Click one of the BlackBerry Attachment Connector instances.
3. On the **Instance information** tab, locate either the **MDS Connection Service Instance name** section or the **Email (Exchange) Instance name** section. Consider the following naming conventions:
 - If you locate the section that is named **MDS Connection Service Instance name**, the BlackBerry MDS Connection Service connects to this BlackBerry Attachment Connector instance.
 - If you locate the section that is named **Email (Exchange) Instance name**, the BlackBerry Enterprise Server connects to this BlackBerry Attachment Connector instance.
4. Click **Edit instance**.
5. Perform one of the following actions:

- If the BlackBerry MDS Connection Service connects to the BlackBerry Attachment Connector instance, in the **Instance information** section, in the **Friendly description** field, type a unique name (for example, <server_name>_AC_MDSCS).
- If the BlackBerry Enterprise Server uses the BlackBerry Attachment Connector instance, in the **Instance information** section, in the **Friendly description** field, type a unique name.

6. Click **Save all**.

The BlackBerry Administration Service updates the list of BlackBerry Attachment Connector instances automatically to use the names that you typed.

Users experience unexpected behavior with message lists and calendars on BlackBerry devices

Possible cause

If the MAPI and CDO client version 6.5.8022 was installed without uninstalling previous versions of the MAPI and CDO client (including the associated .DLL files), users might experience unexpected behavior with message lists and calendars on BlackBerry devices.

Possible solution

For more information about Microsoft Exchange Server MAPI Client and CDO version 1.2.1, visit www.microsoft.com.

1. In the Windows Services, stop the services for the BlackBerry Enterprise Server and any processes that use the MAPI and CDO client.
2. Remove the MAPI and CDO client version 6.5.8022.
3. Verify that the following files are not present in C:\Windows\System32 or any other directory in the environment path:
 - CDO.DLL
 - EMSABP32.DLL
 - EMSMDB32.DLL
 - EMSUI32.DLL
 - EMSUIX32.DLL
 - GAPI32.DLL
 - MAPISP32.EXE

- MSPST32.DLL
 - WMSUI32.DLL
4. In C:\Windows\System32, run the FixMapi.exe application.
 5. Install the MAPI and CDO client version 6.5.8022.
 6. Restart the services for the BlackBerry Enterprise Server and any processes that use the MAPI and CDO client.

If you run the BlackBerry Enterprise Server setup application after you complete the possible solution, when the setup application displays the preinstallation checklist, an error message indicates that the setup application could not detect the MAPI and CDO client. The setup application displays this error message because you installed the MAPI and CDO client version 6.5.8022 in a different directory than the directory that you installed it in for previous versions. The error message does not prevent the BlackBerry Enterprise Server setup application from completing the installation process successfully.

Some BlackBerry Enterprise Server components do not start

Possible cause	Possible solution
The BlackBerry Administration Service, BlackBerry MDS Connection Service, or BlackBerry Collaboration Service is configured to use a dynamic port when it connects to the BlackBerry Configuration Database, but the database server uses a static port.	<p>Configure a static port for the BlackBerry Configuration Database.</p> <ol style="list-style-type: none"> 1. On the computer that hosts the BlackBerry Enterprise Server component, on the taskbar, click Start > All Programs > BlackBerry Enterprise Server. 2. Right-click BlackBerry Server Configuration and select Run as administrator. 3. On the Database Connectivity tab, clear the Use dynamic ports or specify SQL port check box. 4. In the Use dynamic ports or specify SQL port field, type the correct port number. 5. Click OK. 6. In the Windows Services, restart the services for the BlackBerry Enterprise Server component.
The BlackBerry Administration Service, BlackBerry MDS Connection Service, or BlackBerry Collaboration Service is	Configure the component to use the correct port number.

Possible cause	Possible solution
configured to use an incorrect static port number when it connects to the BlackBerry Configuration Database.	<ol style="list-style-type: none">1. On the computer that hosts the BlackBerry Enterprise Server component, on the taskbar, click Start > All Programs > BlackBerry Enterprise Server.2. Right-click BlackBerry Server Configuration and select Run as administrator.3. On the Database Connectivity tab, clear the Use dynamic ports or specify SQL port check box.4. In the Use dynamic ports or specify SQL port field, type the correct port number.5. Click OK.6. In the Windows Services, restart the services for the BlackBerry Enterprise Server component.

You cannot access the BlackBerry Administration Service

Possible cause

The computer that hosts the BlackBerry Administration Service has more than one NIC and the production NIC is not first in the bind order in Windows network settings as it must be for you to access the BlackBerry Administration Service.

Possible solution

On the computer that hosts the BlackBerry Administration Service, in the Windows network settings, verify that the production NIC is first in the bind order. For more information, visit www.blackberry.com/btsc to read article KB18190.

You cannot create a user account in the BlackBerry Administration Service

Possible cause	Possible solution
The BlackBerry Administration Service is configured to use static ports when it connects to the BlackBerry Configuration Database server, but the BlackBerry Configuration Database server uses a dynamic port.	Configure the BlackBerry Administration Service to use a dynamic port for the BlackBerry Configuration Database. <ol style="list-style-type: none">1. On the computer that hosts the BlackBerry Enterprise Server component, on the taskbar, click Start > All Programs > BlackBerry Enterprise Server.2. Right-click BlackBerry Server Configuration and select Run as administrator.3. On the Database Connectivity tab, select the Use dynamic ports or specify SQL port check box.4. Click OK.5. In the Windows Services, restart the services for the BlackBerry Administration Service.

The BlackBerry Administration Service pool name is the same as the FQDN of the host computer

Possible cause

A DNS record was not created before a BlackBerry Administration Service instance was installed.

Possible solution

1. Create the DNS record for the BlackBerry Administration Service instance.
2. On the computer that hosts the BlackBerry Enterprise Server component, on the taskbar, click **Start > All Programs > BlackBerry Enterprise Server**.

3. Right-click **BlackBerry Server Configuration** and select **Run as administrator**.
4. On the **Administration Service - High Availability** tab, in the **Pool name** field, type the name of the BlackBerry Administration Service pool.
5. In the Windows Services, restart the services for the BlackBerry Administration Service.

The text in the license agreement is not readable

Possible cause

You have not installed the appropriate languages and text services on the computer that you use to install the BlackBerry Enterprise Server.

Possible solution

Verify that you installed the appropriate languages and text services on the computer that you use to install the BlackBerry Enterprise Server.

Related resources

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To read the following guides or additional related material, visit <http://www.blackberry.com/go/serverdocs>.

Guide	Information
<i>What's New in BlackBerry Enterprise Server 5.0 SP4 Job Aid</i>	<ul style="list-style-type: none">• Summary of new features
<i>BlackBerry Enterprise Server Update Guide</i>	<ul style="list-style-type: none">• Summary of updates to the administrator guides for BlackBerry Enterprise Server 5.0 SP4
<i>BlackBerry Enterprise Server Release Notes</i>	<ul style="list-style-type: none">• Description of known issues and potential workarounds
<i>BlackBerry Enterprise Server Upgrade Guide</i>	<ul style="list-style-type: none">• System requirements• Upgrade instructions
<i>BlackBerry Enterprise Server Policy Reference Guide</i>	<ul style="list-style-type: none">• Descriptions of available IT policy rules and application control policy rules• Descriptions of Wi-Fi configuration settings and VPN configuration settings

Glossary

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AES	Advanced Encryption Standard
AJAX	Asynchronous JavaScript and XML
BlackBerry CAL	A BlackBerry Client Access License (BlackBerry CAL) limits how many users you can add to a BlackBerry Enterprise Server.
BlackBerry Domain	A BlackBerry Domain consists of the BlackBerry Configuration Database with its users and any BlackBerry Enterprise Server instances that connect to it.
BlackBerry MDS	BlackBerry Mobile Data System
CAS	Client Access Server
CDMA	Code Division Multiple Access
CDO	Collaboration Data Object
DMZ	A demilitarized zone (DMZ) is a neutral subnetwork outside of an organization's firewall. It exists between the trusted LAN of the organization and the untrusted external wireless network and public Internet.
DNS	Domain Name System
FQDN	fully qualified domain name
HTTP	Hypertext Transfer Protocol over Secure Sockets Layer
HTTPS	Hypertext Transfer Protocol over Secure Sockets Layer
IIS	Internet Information Services
IP	Internet Protocol
IP address	An Internet Protocol (IP) address is an identification number that each computer or mobile device uses when it sends or receives information over a network, such as the Internet. This identification number identifies the specific computer or mobile device on the network.
JDK	Java Development Kit
JRE	Java Runtime Environment
LAN	local area network
LDAP	Lightweight Directory Access Protocol

MAPI	Messaging Application Programming Interface
messaging server	A messaging server sends and processes messages and provides collaboration services, such as updating and communicating calendar and address book information.
NIC	network interface card
NSPI	Name Service Provider Interface
RAID	redundant array of independent (or inexpensive) disks
SNMP	Simple Network Management Protocol
SQL	Structured Query Language
SRP	Server Routing Protocol
SSL	Secure Sockets Layer
TCP	Transmission Control Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol (TCP/IP) is a set of communication protocols that is used to transmit data over networks, such as the Internet.
TLS	Transport Layer Security
Triple DES	Triple Data Encryption Standard
UDP	User Datagram Protocol
VPN	virtual private network
WAN	wide area network
XML	Extensible Markup Language

Legal notice

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